

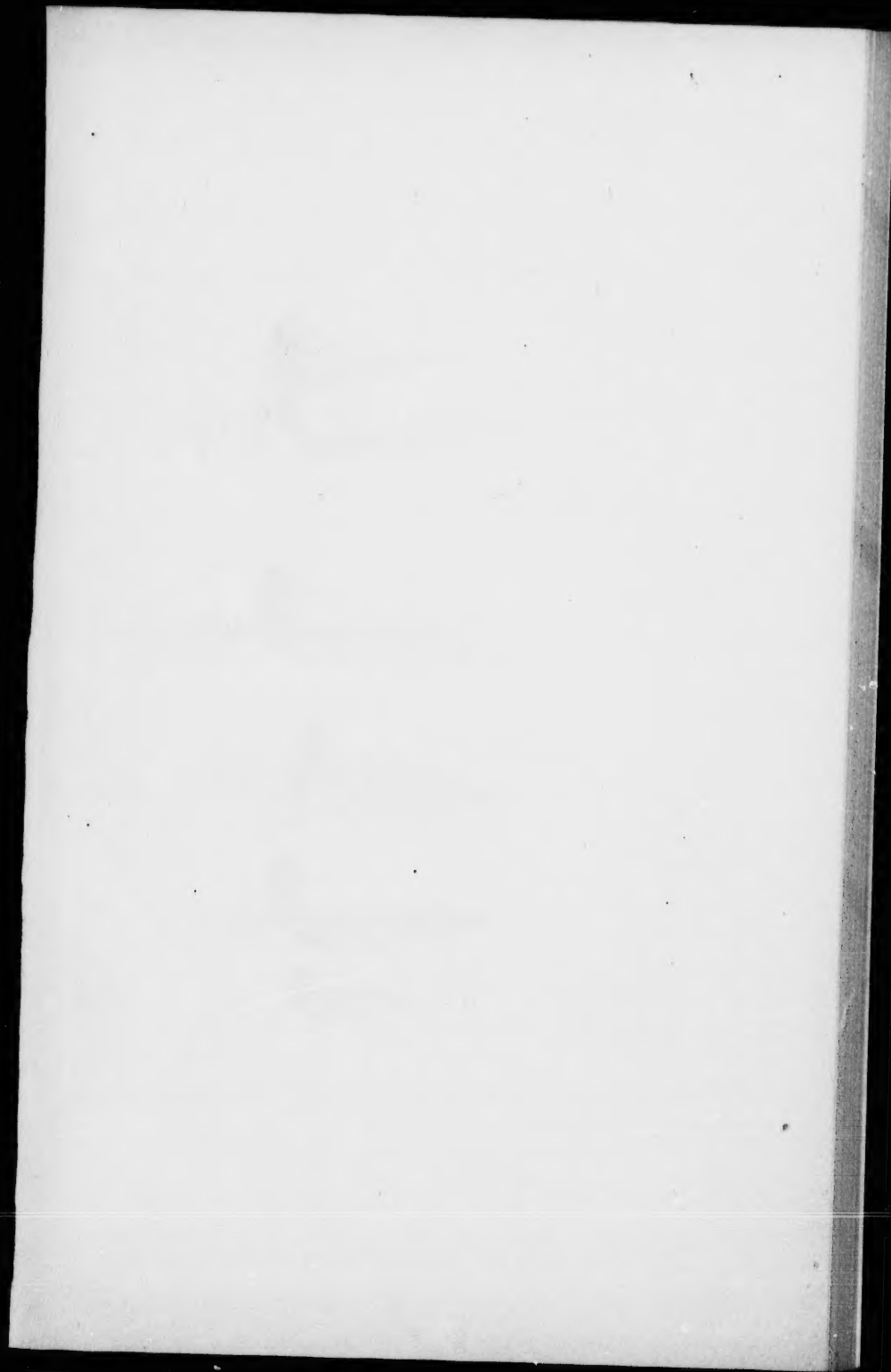


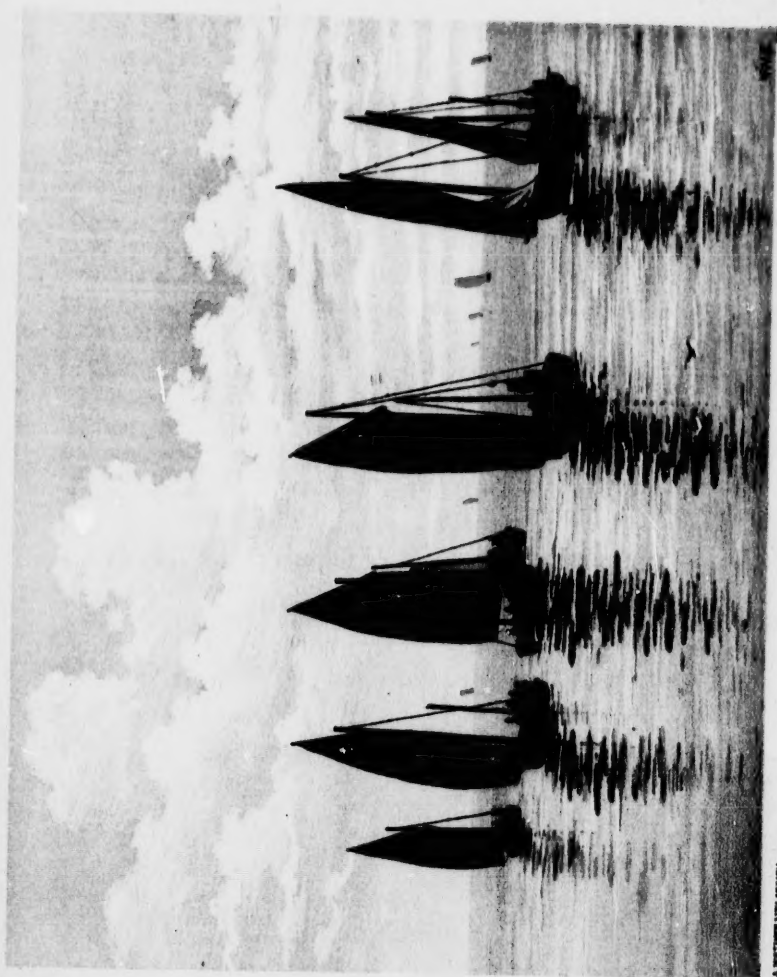
James G. Smith

REPORT

ON THE HERRING FISHERY OF THE STATE OF NEW YORK

HERRING FISHERY INDUSTRY





A. H. MONTGOMERY, PITTSBURGH.

BOUND FOR THE HERRING FISHING

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REPORT

OF

Mr. William Gunn, of Walkerton, Ont., and Mr. M. G. McLeod, of New Haven, N.S.

APPOINTED TO ENQUIRE INTO THE

HERRING FISHING INDUSTRY

OF

GREAT BRITAIN AND HOLLAND.

1889.



OTTAWA :

PRINTED BY BROWN CHAMBERLIN, PRINTER TO THE QUEEN'S MOST
EXCELLENT MAJESTY.

1889.

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*To His Excellency the Right Honourable Lord Stanley of Preston, P.C., G.C.B., &c.,
&c., &c., Governor General of Canada, &c., &c., &c.*

MAY IT PLEASE YOUR EXCELLENCY:

The undersigned has the honour to present to Your Excellency the Special Report of the delegates appointed in 1889 to enquire into the Herring Fishing Industry of Great Britain and Holland.

All of which is respectfully submitted.

CHARLES H. TUPPER,
Minister of Marine and Fisheries.

OTTAWA, 1st February, 1890.

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WALKERTON, 2nd December, 1889.

HON. CHARLES H. TUPPER,
Minister of Marine and Fisheries,
Ottawa.

SIR,—I have the honor to transmit the joint report of myself and Mr. M. G. McLeod, appointed delegates under Order in Council of 27th June last, to proceed to Scotland and Holland to inspect and enquire into the methods of catching, curing and packing herring in those countries.

This report contains considerable matter, original and extracted, bearing upon every point connected with the herring fishing industry, including sketches of its history and struggles; discussions on controversies from time to time arising; deliverances of commissioners appointed by the British Government at various times to investigate important questions affecting the subject, all contributing towards the adoption of the modes at present in vogue in Great Britain of curing, supervising, inspecting and branding herring, after the numerous conflicts through which the industry has passed, from its infancy up to the present time.

The extensive ground covered in the annexed report is due as well to a desire to show what has been done in the past by Great Britain to build up the herring fishing industry, as to anticipate objections which may be urged against any contemplated improvements in this branch of the fishing industry of Canada.

I have the honor to be, Sir,

Your obedient servant,

WM. GUNN.

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REPORT

ON

THE MOST APPROVED MODES OF CATCHING, CURING AND PACKING HERRINGS.

To The Honorable

CHARLES H. TUPPER,

Minister of Marine and Fisheries.

SIR,—We, the undersigned delegates appointed to enquire into the most approved methods of catching, curing and packing herrings in England, Scotland and Holland, have the honor to submit the following report :—

In pursuance of our instructions we proceeded from Quebec to Liverpool on the 11th day of July last, and prosecuted our investigations at Liverpool, London, Great Yarmouth, Edinburgh, Glasgow, Loch Fyne, Inverness, Wick, Aberdeen, Fraserburgh, Leith, Hamburg, Stettin, &c., &c.

Before stating the result of our mission, it may be well to refer to and consider the necessity at present, and for a number of years past, existing for the present enquiry. The condition of the herring fishing industry of the Maritime Provinces of Canada, as far back as 1869, may be learned from the following answers made to questions submitted by a Committee of the House of Commons of Canada to practical fishermen, shipmasters, collectors of Customs, fishery inspectors, overseers, and others, in different parts of the Dominion, in reference to maritime and river fisheries, and the inspection of fish.

The following is a copy of Question No. 4, submitted by said Committee, namely :

State the different manners of curing and packing fish, and what way, in your opinion, improvements in curing and preparing might be made.

Answer of—

Mayor Painchaud, of the Magdalen Islands :

"The fish are badly prepared. This is because the fishermen do not know how to do better. Old customs are hard to alter. The curing would be improved if inspection was compulsory, before the fish was sent to market."

J. W. Fox, Collector, Magdalen Islands :

"In my opinion, great improvements are required and ought to be made here to give the fish a better character than it now bears. This could only be done by the merchant giving more encouragement to the fisherman making a superior article, and by the Government giving an annual prize or bonus to the boat or vessel bringing in the largest quantity and best quality of fish, and by the erection of proper curing houses and flakes, and more attention being paid to the handling, splitting and curing of cod, as well as splitting, salting and curing herring."

Hon. J. Ferguson, Senator, Bathurst :

"The fishermen should be required to salt and pickle herring immediately after removing them from the nets. By the present system herring are landed before being cured, and being thus out of salt from six to twenty-four hours the quality becomes deteriorated in consequence."

Mr. Mathews, Fisherman, Létte, N.B. :

"Herrings are salted loosely in casks or barrels, using about half a bushel of salt to the barrel. In four or five days after the salting they are re-packed in tight barrels, a layer of herrings and then a layer or sprinkling of salt being placed till as many are placed in the barrel as it will hold (about the same quantity of salt being used as before). The barrel is then filled with strong pickle."

Mr. Heney, Fisherman, Deer Island :

"All herring caught here are cured in pickle, either for packing or smoking."

Mr. Tory, Guysboro', Fisherman :

"Improvement might be made in curing fish if proper care was taken, and the fish had to pass through the hands of proper inspectors and cullers. Improperly cured fish would not then find purchasers, and this would compel fishermen to take more pains in curing."

Collector Tremain, Port Hood :

"Fish are cured here by salting, and drying, and pickling. I know of no improvement except more care in the curing."

Collector Ruggles, West Port :

"Herring should be all opened with a knife and filled with salt ; otherwise they cannot be properly cured."

Collector Ratchford, Parrsboro' :

"No established method of curing."

Mr. Gordon, ex-Fish Dealer, Pictou :

"It is the universal practice of the Nova Scotia fishermen to steep the fish for hours in water before salting down, and expose to the action of the sun, during the hottest period of the season, until the water becomes warm, under the erroneous impression that they are thus benefited by the extraction of the blood."

"Although pickled fish may be cured after the most perfect manner, unsuitable materials used for the package will render them to a great extent valueless, and although the barrels may be made by professed coopers, and of the best materials, if not carefully handled in shipping and stowage will sustain damage that cannot be afterwards remedied."

C. C. Fox, Collector, Gaspé Basin :

"As all pickled fish is prepared by the fishermen themselves, you cannot see what the barrel contains; and the system of large advances in vogue in the fishing districts induces the merchant to take gladly anything he can get, to help liquidate his debt, without being particular as to quality."

The answers above given to the questions above quoted afford abundant evidence of the very unsatisfactory condition in which much of the pickled herring of the Lower Provinces reached Quebec and Montreal in 1869. At this distance of time it is impossible to say what degree of improvement followed the exposure of the state of the herring trade as indicated by those answers. But whatever it may have been, it is evident that there has been a relapse, and that the condition of much of the herring reaching western Ontario of late has been very inferior in quality.

Enquiries instituted during last winter among wholesale and retail dealers established the fact that the herring barrel at present in use in the Maritime Provinces is deficient in strength and incapable of standing the rough usage to which it is exposed in the course of transportation, for long distances, by the railways; that consequently, in the majority of cases a part of the chine, breaks or a stave dinges in, thus permitting the brine to run off, and so causing certain and serious deterioration of the fish—that this deterioration is accelerated and intensified in all cases in

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which the herring have not been gutted, the result in such cases being quick decay and putridity; and in the case of properly gutted herring, rust, which renders the fish hard, bitter and unfit for use. In Scotland we ascertained that some years ago herring barrels had been made by machinery. Captain Clarke, to whom we had a letter from the Department, was absent from Glasgow all the time we were there, but we obtained from the Captain of the "McBrayne" steamer on Loch Awe, satisfactory information concerning these barrels. He had commanded a steamer on the West Coast of Scotland, and had carried from Glasgow to Stornaway, and other ports many hundreds of these machine made barrels for Glasgow firms engaged in the herring trade. They were used for a very short time, having been found insufficient, too weak and not tight enough. They were found quite unsuitable for the trade, and their use was totally abandoned. Another fault in the curing of Lower Province herring complained of by retail dealers and customers, is the inordinate and unnecessary quantities of salt too frequently used, especially in the case of the unbranded herring, by which the nutritious qualities of the fish are entirely destroyed and the fish rendered quite unsuitable for food. An experienced retail dealer pronounced large quantities of Lower Province herring as being quite unfit to eat. These enquiries established the fact that only a comparatively small percentage of herring barrels reached western retail dealers in a sound state, and also the further fact that the condition of the herring was seriously interfering with the sale of the fish, rapidly destroying the demand for it and driving it out of the western markets. This has been the case as far west as Minnesota, in the United States; a prominent gentleman from that State having informed us in Edinburgh that much of the herring reaching that State from the Maritime Provinces, was unfit for use, and that if Labrador herring were put up and cured as well as the Scotch herring, there would be a very great demand for them, not only in Minnesota, but also in the other Western States.

An intelligent New Brunswick fisherman, writing under date of 17th May, 1889, says:—

"Our fish are put up in a shameful way. Most of the fishermen use more salt than is needed. One object is to cheat; the other is careless neglect. The fish remain so long out of the water before they go in the salt that it is impossible to cure them. Then the fishermen fill the barrel half full of salt, under the mistaken idea that the injury done in this way will be remedied, and that the fish will be all right. Our barrels are got up cheap—45 cents for large and 25 cents for half barrels. They are made of poor stuff—staves too thin, with poor hoops. There is not much money in the herring trade for the honest fisherman, as bad fish bring the same price as the good. For that reason the fisherman is careless. We put up a lot of fish last year (1888) well cleaned, washed, good and sweet, 100lbs. in each half barrel, with half a bushel of salt, and we only received 5 cents a barrel more for them than those who put up bad fish. In fact, the fisherman is not encouraged. The fish merchant buys of the fisherman in large packages; then he re-packs into half barrels, making a gain in quantity, and so the consumer is cheated right and left."

In a letter dated 26th April, 1888, from a gentleman in Nova Scotia of much experience in the herring trade, while virtually admitting the weakness of the herring barrel now in use in the Maritime Provinces, the writer is of the opinion, as we are, that more careful handling on the railways would obviate many of the evils arising from the breakage of chimes and staves. He says: "The package can be made stronger, if that be found necessary."

With regard to the excessive use of salt, he says: "That it is a well-known fact that it requires a bushel and a-half of salt to cure and pack one barrel of herrings, and when more than this quantity is used there must be shortage in the weight of fish—as the barrel commonly used for exporting the article is made with a view to hold this quantity, and no more—and that if enough salt is used in some cases, as alleged, to cure two or three barrels of herrings, it must be evident that the full weight of fish cannot be in the package. For instance, the ordinary herring barrel, as required by law, will of itself hold only three and a-half bushels, and if, after the

herring is taken out, enough salt remains to cure one or more barrels, the package would be one-fourth or more filled with salt, and as a consequence could not contain the proper quantity of fish, as by law required; so that something must be wrong here."

As to the color of the brine, and the offensive smell so frequently complained of by retail dealers and consumers, the same gentleman says: "In the first place, when in consequence of carelessness the fish is poorly or only half washed before salting, the blood still remaining in the fish will come out after salting and give the brine a dark color; and, in the next place, if the fish is not properly salted, or has an insufficient quantity of that article, it will become tainted, and have an offensive smell. This, however, can be soon discovered by tasting the fish, or by breaking it open, when it will be found tainted at the bone, and unfit for use. But all this can be obviated by exercising proper care in handling the fish in the first place; by washing thoroughly, and afterwards using the proper quantity of salt in order to cure perfectly. An over quantity of salt, however, is not desirable, as it dries up the fish, and destroys the nutritious qualities of the herring in a marked degree."

On curing herring, in general, this gentleman says: "Certainly every care should be taken to cure the fish properly, and every step taken in this direction is laudable and worth considering. Could we get our people educated up to a proper standard of curing, it would be a great matter. But they have a great deal to learn, and it is almost impossible to get our fishermen to understand this, yet I hope the time is not far distant when more successful efforts will be made to teach them, as there is no denying the fact that our system of curing fish has been found faulty."

In a letter dated 17th April, 1889, from a large wholesale house in western Ontario, that deals extensively in sea herrings, the wish and hope are expressed that a stronger barrel may be introduced, and that Labrador and all other herrings will be properly gutted and cured before packing.

From the foregoing, it clearly appears that great inefficiency, imperfection, carelessness, and misapprehension still obtain in the Maritime Provinces as to the curing of herring. And, in the face of the very strenuous efforts, now, and for some years past, made by those nations of Europe interested in the herring fisheries to push the sale of their herrings in all markets, it need not surprise us to find that our exportation of herrings from Canada has seriously declined during the last three years, as the following statement of exports for 1885, 1886, 1887 and 1888 plainly shows:—

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Germany

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**GENERAL STATEMENT of the Quantity and Value of Pickled Herring Exported from
the Dominion of Canada during the following years :—
1885.**

ARTICLES AND COUNTRIES TO WHICH EXPORTED.	PROVINCES WHENCE EXPORTED.	GOODS, THE PRODUCE OF CANADA.		GOODS, NOT THE PRODUCE OF CANADA.		TOTAL EXPORTS, PRODUCE AND NOT PRODUCE.	
		Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
		Brls.	\$	Brls.	\$	Brls.	\$
Great Britain.....	Quebec.....	27	75			27	75
	Nova Scotia.....	19	76			19	76
	New Brunswick.....	346	806			346	806
		392	957			392	957
United States.....	Ontario.....	10	40			11	47
	Quebec.....	11,376	28,071	1,102	6,278	12,478	34,949
	Nova Scotia.....	66,511	200,594			66,511	200,594
	New Brunswick.....	20,488	61,200			20,488	61,200
	P. E. Island.....	5	29			5	29
		98,390	290,534	1,103	6,285	99,493	296,819
Newfoundland.....	Quebec.....	57	117			57	117
	P. E. Island.....			124	496	124	496
		57	117	124	496	181	613
B. W. Indies.....	Quebec.....	329	680			329	680
	Nova Scotia.....	30,084	101,436			30,084	101,436
	New Brunswick.....	1,182	2,908			1,182	2,908
	P. E. Island.....	2	7			2	7
		31,597	105,031			31,597	105,031
S. W. Indies.....	Nova Scotia.....	14,820	49,431			14,820	49,431
D. W. Indies.....	do.....	1,285	4,499			1,285	4,499
F. W. Indies.....	do.....	1,589	5,318			1,589	5,318
British Guiana.....	do.....	2,997	7,322			2,997	7,322
Germany.....	do.....	7	20			7	20
Portugal.....	do.....	5	20			5	20
Brazil.....	do.....	10	50			10	50
Madeira.....	do.....	20	90			20	90
Total.....	Ontario.....	10	40	1	7	11	47
	Quebec.....	11,789	29,543	1,102	6,278	12,891	35,821
	Nova Scotia.....	117,347	368,856			117,347	368,856
	New Brunswick.....	22,016	64,914			22,016	64,914
	P. E. Island.....	7	36	124	496	131	532
		151,169	463,389	1,124	6,781	152,393	470,170

**GENERAL STATEMENT of the Quantity and Value of Pickled Herring, &c.—Continued.
1886.**

ARTICLES AND COUNTRIES TO WHICH EXPORTED.	PROVINCES WHENCE EXPORTED.	GOODS, THE PRODUCE OF CANADA.		GOODS, NOT THE PRODUCE OF CANADA.		TOTAL EXPORTS, PRODUCE AND NOT PRODUCE.	
		Quantity.	Value.	Quan'y.	Value.	Quantity.	Value.
		Brls.	\$	Brls.	\$	Brls.	\$
Great Britain.....	Quebec.....	113	440			113	440
	Nova Scotia.....	275	999			275	999
		388	1,439			388	1,439
United States.....	Quebec.....	632	1,059	4	16	636	1,975
	Nova Scotia.....	18,236	50,085			18,236	50,085
	New Brunswick.....	9,423	26,096			9,423	26,096
	P. E. Island.....	8	32			8	32
		28,299	78,172	4	16	28,303	78,188
Germany.....	Nova Scotia.....	75	225			75	225
Portugal.....	do.....	100	230			100	230
B. W. Indies.....	Quebec.....	55	112			55	112
	Nova Scotia.....	23,593	72,392	225	572	23,818	72,964
	New Brunswick.....	8	24			8	24
		23,656	72,528	225	572	23,881	73,100
S. W. Indies.....	Nova Scotia.....	12,501	37,166	150	450	12,651	37,616
F. W. Indies.....	do.....	632	1,353			632	1,353
D. W. Indies.....	do.....	1,089	3,272			1,089	3,272
British Guiana.....	do.....	2,205	7,559			2,205	7,559
	New Brunswick.....	150	413			150	413
		2,355	7,972			2,355	7,972
Brazil.....	Nova Scotia.....	5	10			5	10
Newfoundland.....	Quebec.....	1	4			1	4
	Nova Scotia.....	109	127			109	127
	P. E. Island.....	20	20	101	305	121	325
		130	151	101	305	231	456
St. Pierre.....	Nova Scotia.....	16	52			16	52
Madeira.....	do.....	10	35			10	35
Total.....	Quebec.....	801	2,515	4	16	805	2,531
	Nova Scotia.....	58,846	173,595	375	1,022	59,221	174,617
	New Brunswick.....	9,581	26,533			9,581	26,533
	P. E. Island.....	28	52	101	305	129	357
		69,256	202,605	480	1,343	69,736	203,948

&c.—Continued.

**GENERAL STATEMENT of the Quantity and Value of Pickled Herring, &c.—Continued.
1887.**

TOTAL EXPORTS, PRODUCE AND NOT PRODUCE.	
Quantity.	Value.
Brls.	\$
113	440
275	999
388	1,439
636	1,975
18,236	50,085
9,423	20,096
8	32
28,303	78,188
75	225
100	230
55	112
23,818	72,964
8	24
23,881	73,100
12,651	37,616
632	1,353
1,089	3,272
2,205	7,559
150	413
2,355	7,972
5	10
1	4
109	127
121	325
231	456
16	52
10	35
805	2,531
59,221	174,527
9,581	26,533
129	357
69,736	203,948

ARTICLES AND COUNTRIES TO WHICH EXPORTED.	PROVINCES WHENCE EXPORTED.	GOODS, THE PRODUCE OF CANADA.		GOODS, NOT THE PRODUCE OF CANADA.		TOTAL EXPORTS, PRODUCE AND NOT PRODUCE.	
		Quantity.	Value.	Quan'y.	Value.	Quantity.	Value.
		Brls.	\$	Brls.	\$	Brls.	\$
United States.....	Quebec.....	1	4			1	4
	Ontario.....	1,645	3,365	100	500	1,745	3,865
	Quebec.....	1,413	4,854	260	930	1,673	5,784
	Nova Scotia.....	20,310	72,971	827	3,314	21,137	76,285
	New Brunswick.....	10,017	34,849			10,017	34,849
	British Columbia.....	1	8			1	8
	P. E. Island.....		3				3
		33,386	115,050	1,187	4,744	34,573	120,794
France.....	Nova Scotia.....	45	135			45	135
B. W. Indies.....	Quebec.....	57	139			57	139
	Nova Scotia.....	21,024	80,777	100	216	21,124	80,993
	New Brunswick.....	38	133			38	133
		21,119	81,049	100	216	21,219	81,265
S. W. Indies.....	Nova Scotia.....	10,787	32,858			10,787	32,858
F. W. Indies.....	do.....	291	1,013			291	1,013
D. W. Indies.....	do.....	822	2,804			822	2,804
B. Guiana.....	do.....	2,389	8,502			2,389	8,502
Newfoundland.....	Quebec.....	576	2,041	256	512	832	2,553
	Nova Scotia.....	26	56			26	56
	P. E. Island.....	110	310			110	310
		712	2,407	256	512	968	2,919
Portuguese Poss. in Africa	Nova Scotia.....	40	188			40	188
Total.....	Ontario.....	1,645	3,365	100	500	1,745	3,865
	Quebec.....	2,047	7,038	516	1,442	2,563	8,480
	Nova Scotia.....	55,734	199,304	927	3,530	56,661	202,834
	New Brunswick.....	10,055	34,982			10,055	34,982
	British Columbia.....	1	8			1	8
	P. E. Island.....	110	313			110	313
		69,592	245,010	1,543	5,472	71,135	250,482

**GENERAL STATEMENT of the Quantity and Value of Pickled Herring, &c.—Continued.
1888.**

ARTICLES AND COUNTRIES TO WHICH EXPORTED.	PROVINCE WHENCE EXPORTED.	GOODS, THE PRODUCE OF CANADA.		GOODS, NOT THE PRODUCE OF CANADA.		TOTAL EXPORTS, PRODUCE AND NOT PRODUCE.	
		Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
		Brls.	\$	Brls.	\$	Brls.	\$
Great Britain.....	Quebec.....	222				222	
	Nova Scotia.....	17	905			17	905
		239	970			239	970
United States.....	Ontario.....	25	120			25	120
	Quebec.....	617	2,406			617	2,406
	Nova Scotia.....	32,151	117,227	5,182	11,060	37,333	129,186
	New Brunswick.....	2,525	8,164			2,525	8,164
	P. E. Island.....	71	347			71	347
		35,389	128,264	5,182	11,060	40,571	140,233
B. W. Indies.....	Quebec.....	18	45			18	45
	Nova Scotia.....	26,164	104,744			26,164	104,744
	New Brunswick.....	59	161			59	161
		26,241	104,950			26,241	104,950
S. W. Indies.....	Nova Scotia.....	12,955	49,189	324	1,371	13,279	50,560
F. W. Indies.....	do.....	292	1,071			292	1,071
D. W. Indies.....	do.....	682	2,698			682	2,698
B. Guiana.....	do.....	2,711	9,053			2,711	9,053
Newfoundland.....	do.....						
	P. E. Island.....	410	1,290	3	13	410	1,290
		410	1,290	3	13	413	1,303
St. Pierre.....	Nova Scotia.....	81	122			81	122
U. S. of Colombia.....	do.....	68	404			68	404
Portuguese Poss. in Africa.....	do.....	234	925			234	925
Total.....	Ontario.....	25	120			25	120
	Quebec.....	857	3,556			857	3,556
	Nova Scotia.....	75,355	285,598	5,509	13,353	80,864	298,951
	New Brunswick.....	2,584	8,325			2,584	8,325
	P. E. Island.....	481	1,637			481	1,637
		79,302	298,946	5,509	13,353	84,811	312,299

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TOTAL EXPORTS,
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Quantity.	Value.
Brls.	\$
399	905
17	74
230	070
25	120
617	2,400
37,333	129,190
2,525	8,164
71	347
40,571	140,233
18	45
20,164	104,744
59	161
20,241	104,050
13,279	50,560
202	1,071
682	2,608
2,711	9,063
3	13
410	1,290
413	1,303
81	122
68	404
234	921
25	120
857	3,356
864	298,861
584	8,325
481	1,637
811	312,299

GENERAL STATEMENT of the Quantity and Value of Pickled Herring, &c.—Concluded.
RECAPITULATION.

YEAR.	PRODUCE OF CANADA.		NOT THE PRODUCE OF CANADA.		TOTAL, PRODUCE AND NOT PRODUCE.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Brls.	\$	Brls.	\$	Brls.	\$
1885.....	151,169	463,380	1,237	6,781	152,396	470,170
1886.....	69,254	292,675	480	1,343	69,736	293,948
1887.....	69,502	245,019	1,543	5,472	71,135	250,482
1888.....	70,302	298,146	5,509	13,353	84,811	312,299

From this statement it appears that the total exports of herrings from Canada were :—

	Barrels.
In 1885.....	152,396
1886.....	69,736
1887.....	71,135
1888.....	84,811

Making the decreases as follows, from 1886 :—

	Barrels.
In 1886.....	82,660
1887.....	81,261
1888.....	67,585

The decreases in our exportation of herrings for the years named are chiefly confined to two of the countries to which we export herrings—the United States and British West Indies.

Our export of herrings to the United States were :—

	Barrels.
In 1885.....	99,493
1886.....	28,303
1887.....	34,573
1888.....	40,571

Our exports to the British West Indies were :—

	Barrels.
In 1885.....	31,397
1886.....	23,881
1887.....	21,219
1888.....	26,241

The significant fact that in the case of both countries the sudden falling off in our exports of herring took place in 1886 shows that the decrease as to the United States cannot be attributable solely or perhaps in any perceptible degree to tariff changes in the duties on herrings in that country. Then to what other causes can we attribute the sudden and permanent decline in our exportations? Two causes may be assigned. It is possible that the quality of our herring in 1885 may have been exceptionally bad, and this happening concurrently with the opening up of the new trade with Holland in herrings may have tended materially to diminish our herring trade with the United States. The imports of herring into the United States from Germany and Holland in 1888 exceeded the decrease in our exportations in any of the years since 1885.

It is a remarkable fact, and a fact worthy of the best consideration of our Canadian fishermen and dealers, that nearly all the herring exported from Germany and Holland are Scotch-cured herring of the best qualities, carefully selected from the large Scotch barrels, and tastefully put up in neat, fancy kegs of the size of one-eighth and one-sixteenth of a Scotch herring barrel. Now, if we are correct in assuming that the causes named operate in the direction of diminishing our exportations, then it is in our own power to remedy the evil—in the first place, by furnishing a better quality of herring, and secondly by an effort to meet the increasing demand in the United States and some portions of Canada, for what are called Dutch herring.

But besides this, by furnishing an article of herring equal to Scotch herring, the consumption of herring in the interior Provinces of Canada can be greatly increased. It is a well known fact that all peoples living far inland from the sea are fond of salt sea herring, if supplied to them of good quality. Almost every body is fond of a good salt herring now and then, and especially in the winter time. We heard in Scotland of a physician of great skill and experience who advised his patients to eat a salt herring every morning, not simply as an article of nourishing diet, but as having a wonderful influence on the general health of the eaters, and acting on the system in some secret, salutary manner of which he was certain, although unable to explain. In an essay on the herring in 1872, Dr. James Silvis Dodds, of England, says: "The herring is highly medicinal, and good for food in the plagues." He also recommends the oil of herrings as "of excellent service in cramps and convulsions." The extent of the herring trade in Europe proves the universality of the demand for herring among all nations, and the inexhaustible supplies of herring contained in the sea tends to show, in a remarkable degree, the wise and generous beneficence and goodness of the Great Creator. As to the suitability of the herring, when furnished in a sound state, for food, we have only to consider the robust health and longevity of the peasantry of Scotland and Ireland, and other continental countries where herring are largely used as an article of food.

The value of the fish taken in Canada in 1888 was \$17,418,510, of which there was exported to the value of \$7,793,183, leaving for home consumption the value of \$9,625,327, being the greater portion of the entire catch, including the fresh water fisheries of Ontario, Manitoba and British Columbia. It is safe to predict that if our herring were as carefully cured as the European herring that nearly the entire catch of herring in the Maritime Provinces would be consumed in Canada, leaving only a small balance for the United States and the West Indies, thus securing for our fishermen better prices in a market at their door.

From all we have seen and learned, we are satisfied that our herring on the Atlantic coast will compare favorably with the herring of Europe, not even excepting that of the west coast of Scotland, and that all that is needed is the ability to prepare and put them up after the European methods. This it is quite possible to do if our people are willing to learn and to adopt those methods. This can be secured by the dissemination of information, a determination and disposition to learn, and an intelligent, patriotic co-operative effort on the part of all concerned, fishermen, merchants and consumers, press, people and legislators, to make Canadian herring, constituting as it does, such an important element of our national industries, our trade and commerce, second to none in the world, in quality at least.

The following statement, compiled from the Fishery Reports, shows the quantity and value of the catch in the Provinces of Nova Scotia, New Brunswick, Quebec and Prince Edward Island in the years 1886, 1887 and 1888, also the quantity and value of pickled, smoked and frozen herrings, respectively, put up in the several Provinces, together with the names of the principal fishing grounds.

From papers annexed to this statement it will be seen that the price received by the fishermen for herring is very low; also, that under present arrangements, the merchants do not feel warranted in giving higher prices. In answer to one of the questions sent out by the Committee of the House of Commons in 1869, Alex. Cormier, trader and farmer, Amherst, Magdalen Islands, says that in his locality fresh herring at that time sold at one shilling per 200 pounds. The Canadian fish-

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erman receives much less for his herring than English and Scotch fishermen receive. Were the herring industry of Canada once placed upon a proper basis the fisherman would receive a higher and more certain price for his fish, and the merchant would secure higher prices and more certain profits.

STATISTICS of the Herring Fishery in the Maritime Provinces, as compiled from the Fisheries Reports.

NOVA SCOTIA.						
	1886.		1887.		1888.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
		\$		\$		\$
Pickled Brls.	155,750	623,000	181,146	815,157	175,285	701,140
Fresh, frozen. Lbs.	260,700	10,428	No returns.		3,120	312
Smoked Boxes	36,761	9,100	85,910	21,477	33,000	8,250
		642,618		836,634		709,702

NEW BRUNSWICK.						
Pickled Brls.	95,180	380,720	82,819	372,685	95,225	380,900
Frozen. Lbs.	21,023,300	126,139	21,986,700	100,933	22,305,500	133,833
Smoked Boxes	1,081,384	270,346	1,478,906	369,749	1,448,250	362,062
		777,205		852,307		870,795

PRINCE EDWARD ISLAND.						
Pickled Brls.	43,204	129,612	38,874	174,933	32,883	131,532

QUEBEC.						
Pickled Brls.	18,560	74,240	18,938	85,221	16,807	67,228
Smoked Boxes	7,560	1,890	9,762	2,440	8,640	2,160
		76,130		87,661		69,388
Total Value.....		1,615,565		1,951,595		1,787,417

RECAPITULATION of the Catch.

PICKLED HERRINGS—Brls.				
	1886.	1887.	1888.	
Nova Scotia	155,750	181,146	175,285	Value, \$4.
New Brunswick.....	95,180	82,819	95,225	
Prince Edward Island.....	43,204	38,874	32,883	
Quebec.....	18,560	18,938	16,807	
Totals.....	312,694	321,677	320,200	954,671

SMOKED HERRINGS—Boxes.

Nova Scotia	36,761	85,910	33,000	Value, 25 cts. per box.
New Brunswick	1,081,384	1,478,996	1,448,250	
Quebec	7,560	9,762	8,640	
Totals	1,025,705	1,574,668	1,489,890	4,190,263

FROZEN HERRINGS—Lbs.

Nova Scotia	260,700		3,120	
New Brunswick	21,023,300	21,986,700	22,305,500	
Totals	21,284,000	21,986,700	22,308,620	

The greatest portion of smoked herrings comes from New Brunswick.
The same may be said of fresh-frozen herrings.
Smoked and frozen herrings are mostly all caught in Charlotte County.

FISHING GROUNDS.

In Nova Scotia, the principal fishing grounds are Digby, Yarmouth, the Strait of Canso, Guysboro' and around Cape Breton Island.

In New Brunswick: Passamaquoddy Bay, Grand Manan Island, Bay des Chaleurs, opposite Caraquet, N.E. part of Gloucester County and Northumberland Strait.

In Quebec: the coast of Labrador and around Magdalen Islands.

CHIEF MARKETS.

Canada and the West Indies.

PRICES OBTAINED.

Pickled herring are generally purchased from the fishermen, who sell them from their vats at so much per barrel. The schooner furnishes the barrels and repacks the fish.

The price paid to the fishermen is on the average basis of \$2 a barrel; but this varies considerably, according to circumstances.

(Extracts from *Fishery Inspector Bertram's Report, 1887.*)

HERRING.

"Though the catch of herring has, in some localities, not been an abundant one, yet the total results of the year's catch in this old and standard branch of the fishing industry shows a gratifying increase of 6,199 barrels over that of last year, together with an increase of 12 per cent in the current market price. The industry of "smoked herring" has not yet attained any importance in Cape Breton. But a new departure in "herring curing" for export has been tried this year, that is, canned herring put up as salmon and mackerel usually are, fresh in cans. Owing to the unequalled excellent quality of the summer herring of this coast, if the experiment of canned herring meets with a favorable reception on public markets, then a new era of profit and prosperity will dawn upon the herring fishery of this island coast. The finest quality of herring is caught on this coast during the middle of the hot season, and, being large and fat, much of it is frequently lost before it can be cleansed and salted. If the canned article proves acceptable to foreign markets, much of the loss heretofore experienced can be averted in the future."

(Extract from *Fishery Inspector Bertram's Report, 1888.*)

HERRING.

"This has proved the staple branch of the Cape Breton fisheries for the year 1888. With two or three minor exceptions, the herring fishery turned out remunerative to a degree that went far to compensate for the loss in other branches. Considering the value of herring as an article of profitable foreign commerce, and as a staple of food for home consumption, the wanton destruction of thousands of barrels of fish on the coasts of this island, annually thrown back in the sea by mackerel seiners, is a most serious matter in the economy of one of the most valuable natural resources of this country. This point will be found more fully referred to in this report under the heading of "Destructive Methods of Fishing." It may be remarked that the summer herring taken on the coasts of this island is unequalled in size and excellence of quality of herring caught on any other coast in North America. This is a local peculiarity of this island, but a never failing one, and this herring always commands two or three dollars more per barrel than other herring in this country. It follows that owing to its being set down at the average price, the true market value of the catch is not by a considerable amount represented in the tables hereto appended.

CANNED HERRING.

I referred to this in my report for 1887 as being then, for the first time, tried as an experiment, which, if it proved acceptable in the market, would in the near future become an important industry in adding to the value of our island fisheries. I am pleased to be able to report that the experiment proved a success, and that the pioneers of the industry received a cordial reception for the product at remunerative prices. Encouraged by the successful issue of the last, they have this year enlarged their canning business, and regard it as being now established on a permanent basis."

The rise and progress of the herring industry in Scotland shows what can be done by a thrifty people under wise legislation and judicious governmental supervision. There was a time in the history of the herring fishery in Scotland when the industry in that country was at as low an ebb as it is with us in Canada now.

In his very interesting work on the herring published in 1864, Mr. Mitchell refers to the wonderful progress made in the fishing industry of Scotland during the last eighty years. He says:—

"The herring fishing has been increasing with steady, as well as rapid progress, since 1808, when the Fishing Board was established. In that year there were cured, in Scotland 90,185 barrels of herring, and in the year ending 1855, 766,703 barrels, besides the quantity caught and sold fresh, 130,759 barrels, making the total quantity of herring caught in 1855, 897,462 barrels. The great increase of this fishery has tended in no small degree to increase the wealth and the number of the population of the Scottish coasts, and the annual addition of the value of the herring trade must have a great and beneficial influence on the prosperity, not only of Scotland, but of the whole British Islands. The addition of nearly one million pounds sterling every year to our national wealth must be extremely gratifying to every patriotic mind. The success of the enterprising inhabitants, at the old curing stations, roused the exertions of the inhabitants of other places where the herring fishery had not been before attempted. While the fishery had been carried on for years previously in the Clyde, in the Firth of Forth, off Berwickshire, and in the northern counties of Caithness and Sutherlandshire, it is only since 1815 that extensive herring fishing stations have been established in Aberdenshire, Banffshire, Morayshire and Rosshire; at Lossie Mouth, Port Roy, Cullen, Portnockie, Findochtie, Portessie, Banff, Whitehills, Macduff, Gardenstown, Roseheart, Pitulie, Fraserburgh, Peterhead, &c., and these have become noted places for herring of the best quality, and as such have added greatly to the number, and the wealth, and the prosperity of the inhabitants.

"The increase of the herring fishery depends very much on the demand for exportation, and this demand requires to be carefully cultivated, not merely by the curers, who may be viewed as the manufacturers of the goods, but by the Government, which by impartial and just legislation protects the interests of the fisherman, the consumers at home, and the merchants and consumers abroad. That there was an abundance of herrings on the Scottish coasts was known for centuries past; but when considerable quantities of them appeared, they were of little remunerative value when caught, because the demand was limited to the mere local consumption. Before the specific and legalized size and quality of the manufactured article—the barrel of well-cured herrings—could be obtained as goods for commercial purposes, a merchant abroad could not buy herrings in Scotland, there having been no legal, distinct specific form and quality. The curer might say: My barrels are of every size, and various in quality and price; but the foreigner could not order nor buy such goods, and he therefore bought herrings which were of legalized size and good quality elsewhere; and although he paid a high price he obtained what he wished in Holland and other countries, and these countries are ready to supply any quantity if Scotland should be unable to do so."

"Before a proper system of legislation was adopted in Scotland, and even for some time after the system was introduced, the demand from abroad was inconsiderable; but confidence having been given from years of experience, and the trade based on a solid foundation, under legal enactments fixing measure and quality, the business progresses, and bids fair every year to extend and increase. To prove the progress of the increase we may state that in 1812 the total quantity of herrings exported to the continent was 4,720 barrels.

	Barrels.
In 1815 it amounted to.....	35,891
1840.....	82,515
1845.....	143,754
1850.....	257,108
1885.....	344,029

"If any evidence were necessary to prove that a fixed legal standard, applying to quantity as well as quality, is necessary to ensure success, this statement is all that can be wished. But we have more direct and convincing evidence still; for when the curers in Scotland thought any size and quality of herrings would sell abroad, and persisted in attempting to supply foreign markets, the attempts were failures, and the demand for fresh herring being limited, the price was so low as not to induce fishermen to proceed to fish, and there was consequently a limited or losing trade. But additional evidence that a staple article, at a fair price, will obtain its position in the market, is obtained by the account of the importations at one of the principal importing ports on the continent (Stettin) for a series of years past.

"In 1825 there was imported there of white herrings in barrels from:—

	Great Britain.	Holland.	Denmark.	Norway.
1825	18,160	4,295	1,960	6,758
1845	81,189	2,457	307	44,264
1850	116,538	568	470	12,507

"In 1885 the quantity exported to Stettin of Scottish herring was 160,572 barrels, being about nine times the quantity sent from this country in 1825, double the quantity in 1845, and more than a third greater than the quantity exported thither in 1850. There were exported to other places on the continent in 1885 344,029 barrels.

"The number of herring fishing boats employed in Scotland in 1856 was 11,251; the number of fishermen, coopers, &c., 91,139. Of these 91,139 people directly employed, 39,266 are fishermen; but if we add those employed indirectly by the money derived from the fishery, namely, the boat-builders, sail-makers, rope-makers, mast-makers, salt-makers, grocers, carters, porters, shipowners, sailors and other

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trades, the number will appear incredible to those who have not an opportunity of closely observing the incalculable benefits accruing to the nation from the prosperous state of such a fishery. Here we see employment to the industrious classes, while they are adding an abundant supply of cheap and wholesome food for the numerous population of the British Islands.

"The great extent of the commerce that arises from the fisheries may be judged of from the number of ships and men employed in importing salt and materials for the fisheries, in conveying the fish on the coasts, and carrying the same to British or foreign ports.

"It would be difficult to give any correct estimate of the capital employed by the fish curers of Scotland; but when it is known that in 1855 there were 1,054 fish curers directly employed in purchasing herrings and curing them for the home and foreign market, it may be supposed that the capital put in circulation must be very great, without reference to the amount circulated by those merchants who principally carry on business in buying the cured herrings.

"The more rapidly the manufactured articles cease to be of use the more employment is afforded to the people; and as the fishing vessels or boats last only a few years, and the nets a shorter time, and as the barrels are generally only available for one year, the continual employment of great numbers of working classes in procuring materials and making them is of no small advantage to the community, and a ready sale is besides afforded for numerous cargoes of hoops from the English, and of stave wood from the Scottish forests, as well as from foreign countries.

"We think it necessary thus to point out not only the great extent, but also the great importance of herring fishery, as proving how much the knowledge of the natural history of the herring is connected with the prosperity of these kingdoms; for without such knowledge this important fishery is in danger of being destroyed."

Although Canada cannot hope to develop such a trade as the herring fisheries of Scotland, yet a great deal can be done to improve the present condition of the herring industry with us, and there is encouragement for us in the foregoing sketch of the rise and progress of the trade in Scotland from 1808 to 1855. But the herring industry has attained to very great dimensions in Scotland since 1855.

To proceed, however, with the purpose and work of our mission, we beg to state that immediately on our arrival in England we waited upon the Honorable the High Commissioner for Canada in London, who procured for us numerous letters of introduction, addressed to fish curers in various parts of Britain; also a letter from the Home Office to the British Consul in Stettin, from whom we received every possible kindness and information. We were also treated most kindly by Mr. Dundas, the British Consul at Hamburgh, although we had no letter of introduction to him. We as soon as possible delivered our letter of introduction to Capt. Graham, Secretary of the Fishery Board of Scotland, who received us most kindly, evinced the deepest interest in the objects of our mission, and furnished us with a general letter addressed to all local fishery officers throughout Scotland. All of these gentlemen upon whom we called were most courteous, painstaking and assiduous in giving us every information in their power—introducing us to fish curers, giving us much of their time, and in every way facilitating the attainment of our purpose. Indeed, we found the fish curers, and all classes engaged in the herring trade with whom we came in contact, ready and willing to give us all the information in their power.

The first great fishing station we visited was Great Yarmouth, England, where the herring fishing on a large scale is carried on. On our arrival there we found ourselves out of the herring fishing season proper, which does not commence there until nearly or about the first of October. Many of the smaller fishing boats were away prosecuting the herring fishing on the east coast of Scotland. From fishermen, owners of boats and fish curers, we obtained much information respecting the herring industry in Yarmouth. We saw herring arrive by trains from Scotland. These herring, well mixed with salt, were put up loosely in barrels. When delivered at the established herring mart they were put up to sale by auction and sold to the highest bidder at six pence per last of 13,000 fish. When counted they were again thrown

loosely into the barrels, and at once, without being gutted, dispatched to London and other adjacent cities and towns. The system of putting up pickled herring is the same as in Scotland, and is very carefully done. In fact, many of the Scotch gutting girls go south to Yarmouth, Lowestoft and other fishing towns in that region in the fall of the year, to work at the gutting and pickling of herring there. The greater portion of the herring taken at Yarmouth are either sold fresh or manufactured into bloaters and kippers, for which there is an enormous demand, and of which we shall treat elsewhere.

BOATS.

The style of fishing boat in use in Yarmouth is a three-masted decked lugger, of from 35 to 60 or 70 tons, with lug-sails, top-sails, mizzen, foresail and jib. They are very strongly built, and can remain out in almost any weather. These vessels are fitted up with compartments in the sides amidships, on each side of the hold, carefully secured and water-tight. Before proceeding on the fishing voyage these compartments are filled with the best salt. The most of them have small donkey engines for hoisting sail and hauling in their nets. They go off to fish a considerable distance from land, about midway in the English Channel, where the herring caught are more suitable for bloaters than those taken nearer land. They carry drifts of nets numbering from 200 to 210 nets, measuring each 48 to 60 feet in length, and 30 feet deep. They use only one-half of their nets at one time, reserving the other half to be used in case of losing the other through stress of weather or other casualty. These nets are of a two different-sized mesh, one for the larger herring and one for the smaller. Their system of fishing is the drift net deep-sea fishing, which is the principal mode of catching herring all round the British Isles, except in some of the firths and arms of the sea. These Yarmouth boats go off in fleets and fish not far from each other. They remain out for days, for a week or more, according to the weather, the temperature and the quantity of fish taken. Recently there has been added to the fleets a mission ship for religious service and worship, and a hospital ship, where the sick and injured may have medical attendance. As is the general custom everywhere, the nets are "shot" or set at sundown and taken in at sunrise. As the nets are hauled in the fish are shaken out of them on deck, where the herring are at once well sprinkled with salt, and then shovelled into the hold, where, by means of a raised platform floor, the blood and liquid offal can drain off, leaving the fish clean, firm and sound. When they come ashore the herring are sold by auction, as already stated, and used up either for sale, fresh, pickled, or manufactured into bloaters and kippers, the fresh fish generally being sent to the London market.

The herring fishing boats and smacks on the south coast of England, the Dutch busses, and the French galliots in general all resemble each other in build, differing somewhat in rigging, being all intended for the same kind of work—the deep-sea drift-net fishing—at considerable distances from land. In the north of England, in Scotland and in Ireland, the herring fishing boats are smaller in size. They are strong, staunch, substantial sea-going boats, of good tonnage capacity for the length of keel, and they are easily handled. In some respects, as to model, rigging and cut of sails, the boats of one port in Scotland differ from those of other ports; the boats of one port may be nearly all alike—good, serviceable boats, without much symmetry of form—while those of other ports are built on finer lines, and present a more graceful appearance to the eye. All, however, are well adapted to the work for which they are intended, in the boisterous North Sea and North Atlantic Ocean.

The fishermen of some ports having what they consider superior sea boats, are looked upon as more venturesome, in going to sea in rough weather, than others—a natural spirit of bold daring as well as confidence in the style of boats, may lead to this. The nearness and accessibility of a harbor, in case of rough weather, would, no doubt, be a consideration in such cases. The following is a description of the Wick herring fishing boat, as taken by us from one of the boats:—

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The herring fishing boats of Wick are now built of a much larger size than formerly. They are from 40 to 60 feet keel, stern and stem posts upright or nearly so, with an average width of from 16½ to 18 feet beam, and from 7 to 8 feet hold, are decked, with a large hatch, the greater part of which is abaft of midship. They are not ceiled, and are rigged with a small jib, a large main-sail and small mizzen-sail. The jib-boom is moveable, and can be taken in and put out as required. There are no stays to it, except a small hemp bobstay, which is made fast to the outer end, and taken under a cleat hook on stem, immediately over the water line, and led on board where it is belayed. The tack of the jib is made fast to the outer end of the jib-boom, and is hoisted without a jib-stay.

The mainsail is made on what we call the lug sail system; tack fastened to luff-hook on stem head. It is not fastened to mast otherwise than by an iron hook on the yard. It is sheeted aft to the quarter, and when tacking has to be lowered, and set on opposite side. The spar is from 50 to 60 feet long. The peak of the sail when hoisted is much higher than the masthead. The mast is not stayed or supported in any way, other than by the step, and where it is secured in the deck. While fishing the mast is lowered and rests upon a crotch about 10 feet long, which is stepped on the afterside of the main hatch. The mast is lowered by the tackle which hoists the mainsail, which consists of a wire runner and double tackle. To hoist the mainsail, one end of the wire runner is made fast to the yard, about 12 feet from the luff, the average length of the yard being about 36 feet. The other end of the wire runner is rove through an iron sheef in the mast within a foot of the head, and the purchase is tackle attached thereto, the other end of the tack's being made fast to an iron strap on the rail on the weather side.

To lower the mast the same tackle is used, by having the end of the runner made fast to the luff-hook on stem head, and tackle purchase made fast to an iron strap immediately abaft the stem head. By heaving tight on the purchase the mast is brought forward sufficient to enable the wedges on the after side, which keep the mast in its place, to be taken away—then lower by slacking away on the purchase, and the masthead falls aft, and as the support in the deck at the afterside is taken away, the mast slides down until it rests on the crotch. The mast is secured in the deck by two fore and aft beams extending from the beam forward of the mast to the forward beam of the main hatch. When raising or lowering the mast these fore and aft beams prevent the mast from swaying. When the mast is hoisted in its place there are chokes or wedges (already mentioned) fitted across the fore and aft beams to prevent it from moving aft. The aft or mizzen sail is also a lug sail, rigged the same as mainsail, only that the tackle is made fast to the mast, which does not necessitate the lowering of the sail when tacking. It is quite small, the mizzen-mast being stepped abaft the hatch, and the sail sheeted to an outrigger which works on the same system as the jib-boom. The mast is always lowered at sea after the nets have been "shot" at night, and hoisted after the nets have been hauled in in the morning. This is done to prevent rolling and unnecessary drifting from the force of the wind on the mast.

THE RUDDER.

The rudder is unshipped when fishing and in harbor. The stern post being upright, as a rule, renders the unshipping and shipping of the rudder an easy task. The rudder is fastened by three strong iron braces and pintals with corresponding braces on stern post. The lower end of the rudder is about 18 inches wide, gradually tapering to the head, which is about 12 inches wide. The tiller is about 8 feet long, and morticed so as to go over rudder head. Each boat carries from 5 to 7 men and from 40 to 50 nets.

NETS AND MESHES.

Before proceeding to describe the herring net and mesh generally in use in Scotland at the present time, it may be well to transcribe what the commission appointed by the British Government, in 1878, to report on the herring industry in

Scotland, has to say about nets and meshes. From this it will be seen that the question of the mesh and its size has been very thoroughly discussed in Scotland. Our own opinion, frequently expressed to fishermen and others in Britain, is, that the present mesh in use in Scotland is too small, and calculated to take immature herring of small size and to allow the larger herring to escape. Wherever we saw newly caught herring we were surprised at the small size of the fish, showing either that the large herring had been fished out years ago, leaving only small young fish to be taken now, or else that the small mesh fails to secure or gill the larger fish. Old people in the north of Scotland know that the herring taken now are not, in size equal to the herring of fifty years ago, and for this there must be some cause. The Scotch fishermen, however, entertain very decided opinions upon the subject, and universally express their preference for the small mesh of 2 inches, which is the smallest mesh for herring allowed by law—when the net is new—but which, as a matter of fact, diminishes in size from the action of the water by swelling the twine, especially the cotton twine, when the nets are put in use.

On this head the British Commissioners in 1878 say:

"Some of the reasons which prevent us from recommending a close season equally deter us from adopting another recommendation which was constantly made to us, namely, that the mesh of the herring nets should be regulated.

"It was over and over again contended by the witnesses who appeared before us that the present mesh of herring nets was too small, and that it would be wiser to have the old mesh of inch from knot to knot. The history of the old mesh is curious. So long ago as 1868 an Act was passed making it illegal to take herrings in any part of Great Britain with any net having a mesh less than inch from knot to knot. This Act still applies to Scotland, but it is practically incapable of enforcement, because it only applies to the territorial seas, and the greatest part of the herrings are not caught in those seas. In the Convention which was concluded with the French Government in 1843, and which was confirmed by the British Act of the same year, the same provision was introduced (Article 28). And while the provision was in force it was undoubtedly illegal for any fisherman to use a net for herrings with less than an inch mesh. The Convention Act was, however, repealed by the Sea Fisheries Act of 1868, and since then no law of mesh has been enforced on the Scotch herring fishermen.

"There is then a precedent for the law of mesh. The first objection to it is that such a law can only be enforced by a fresh Convention, and that it must therefore depend on the views of foreign Governments. Apart, however, from this objection, there are grave reasons for thinking that any interference with the mesh would be inexpedient. The law of mesh was passed to prevent the capture of immature fish. The immature fish will not readily take the salt, and are therefore useless to the fish curer. But the immature fish, it may be observed, command a fair price in the fresh fish markets, and furnish a considerable supply of wholesome food, especially to the poor. Unless it could be shown that the capture of immature fish was diminishing the capture of mature fish, we think that the Legislature should refrain from interference.

"It is indeed true that many fishermen are of opinion (1878) that a larger mesh would actually prove more profitable than the smaller mesh which is now in use. The larger herring are imperfectly meshed in the smaller mesh, and drop out of the nets and are lost. We are inclined to believe that the fishermen are, in many cases, using too small a mesh. Some of the most intelligent among them are of this opinion, and are ordering meshes of a larger size, even down to 33 to the yard; but it would evidently not be wise in the interests of the fishermen to interfere with the fishermen on this ground. It might under certain circumstances be necessary to provide a certain mesh to save immature fish. That course has long been adopted in the case of salmon, but it could hardly be justifiable to institute a larger mesh for the sake of increasing the immediate profits of the fishermen. The fishermen themselves must, in the long run, be the best judges of the mesh which it pays them to

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use; and (excepting for the protection of the fisheries) there can be no reason for interfering by legislation.

"There is another reason against any interference with the mesh. A cotton net, when it leaves the factory, has a larger mesh than after it is barked. The mesh shrinks with every fresh barking. The stouter cotton shrinks more than the finer cotton, and inferior thread shrinks more than the better thread. A net weighing 20 lbs., with 32 meshes to the yard; a net weighing 16 lbs., with 33 meshes to the yard; a net weighing 14 lbs., with 34 meshes to the yard; and a net weighing 13 lbs., with 35 meshes to the yard, would all shrink to about the same size, or to about 36 meshes to the yard. A fisherman ignorant of this fact, ordering a net with a little stronger thread, or employing a manufacturer who supplied him with an inferior article, might unwittingly be led to an infraction of the law.

"This circumstance has so much force that many of the witnesses who have recommended the regulation of the mesh are in favor of enforcing the law in the manufactories. The manufacturers, as a rule, would not object to this arrangement, because it would give less trouble, and then pay them better to make a net with a wider than a narrower mesh. We should imagine, however, that Her Majesty's Government would hesitate to institute machinery for examining all nets made in every factory."

The nets now (1889) in use in Britain are made of cotton with 2, and in some cases 2½-inch mesh, 360 meshes deep and 20 fathoms long unmounted. A single head rope of about 2½-inch manilla, made expressly for the purpose, and which will not kink, the norsels are very large, and when fastened will leave a space of about 5 inches between the net and the head rope. There is a round piece of cork-wood on every second norsel, which is put on before the norsel is made fast to the head rope, the norsel being put through a hole in the cork wood. This cork-wood keeps up, or floats the head rope toward the surface of the water, while the lower part of the net is kept down by stone sinkers placed at intervals of 5 to a net.

Before leaving harbor the nets are carefully laid in the hatch, the head rope being placed aftermosts the stone sinkers placed, one directly on top of the other at the forward end of the hatch, the twine or body of the nets being in the middle, sheepskin or dogskin buoys being made fast, with 3 fathoms of scope line, at the ends, or fastening, of each net to the other, along the whole drift, or number of nets carried by the boat. Having the nets so carefully laid enables the crew when they arrive at the fishing ground, to "shoot" or set them as fast as the boat can sail. When the nets are all in the water they are 3 fathoms from the surface. This secures them from all danger from passing vessels, while the sheepskin buoys and the corks prevent them from sinking, 3 fathoms being the distance the buoy is from the net.

The usual end-mounting is used along the end of the nets, and a small line run along the foot, while the head, which requires to be very strong, owing to the depth of them, is mounted with a line about the size of an 18 thread hemp cod line, the norsels being made fast to this line, and on the net side of the line, or between the real net and the line, first one mesh deep of large twine doubled, and five meshes deep of large twine single. When the nets are set for fishing the nearest one to the boat would be about 100 feet distant from the boat, for which purpose a large hawser is used, one end made fast to the end of the head rope of the nearest net to the other to a timber head in the stern of the boat, which they have in the boat for this purpose.

The time for "shooting" or setting the nets is at sunset. The regulations of the Scottish Fishery Board render this imperative; but, as too often happens in the case of the most salutary regulations, violations do occur. The commission appointed by the British Government in 1878, already referred to in their report on this subject, says:

"It is also desirable to prohibit the shooting of any movable or drift nets between sunrise and sunset, as no doubt shooting in daylight scares the fish, and in this way causing the shoal of herring to sink the act of one or two improvident

crews or persons, may cause great loss to all the rest. The herring is a timid fish, and is easily scared by noise or any circumstances; and, however little effect the enormous mass of netting may have on the general stock of herrings, we think it feasible to conclude that the fish may be scared by these means from the immediate fishing ground, and deterred or interrupted from entering the lochs and firths of Scotland, and may possibly have the effect of scaring the fish from entering those narrow waters."

In this connection a very curious circumstance happened in one of the lochs on the west coast of Scotland some years ago. Certain fishermen disregarding the rule for setting nets, shot their nets in the loch in the day time, and were rewarded by a good catch of fish for several days. Great surprise was expressed at the fact of so many herring being gilled in broad day light, until it was discovered that the fish were all blind, a film having formed on the eyes of all the herring, and this it was supposed happened from the fact of the fish having been enclosed in the loch for some time in water comparatively shallow, and exposed to the rays of the sun.

It is customary for the night watch on the boat to try the nets during the night to ascertain what fish has been gilled. This is done by hauling in the hawser made fast to the drift and the whole or part of the first net, but in any event the nets are hauled in at day break and the herrings shaken out or not as may be found most convenient. The nets are taken in by a machine which Scotch fishermen call an iron man. This machine is made of iron, having three sheaves on one side through which the head rope of the net goes, the twine or body of the net going along between the machine and the rail. This machine is worked by a crank which one man turns, while one holds the turn of the head rope, and the others of the crew gather the twine or body of the net and the fish in. Very often the boats go off long distances to fish, 10, 12, 30, 40 and more miles. Under such circumstances the crews are naturally anxious to return to port, and therefore, as a rule, they do not and cannot take time to shake out the fish as the nets are hauled in; so that nets and fish have to remain in one mass until the boats reach harbor.

This is to be regretted, as there can be no doubt that the superincumbent weight of nets and fish, especially in hot weather and on calm days, must affect the quality of the fish more or less injuriously—whereas, could the fish be at once shaken out of the nets at sea, and salt at once applied, as is done by the Yarmouth smacks and the Dutch, all deterioration would be avoided and the fish delivered in perfect condition.

When the fish are not shaken out of the nets at sea of course the salt cannot be applied, and it often happens that boats do not reach harbor until late in the afternoon or evening

ARRIVAL IN HARBOR.

In former times herring were contracted for, beforehand, by the fish curers, at so much a cran, which was a measure containing a sufficient quantity of green herring to make a barrel of gutted and packed herring, at the final filling up of the barrel. Now, however, in Scotland as in Yarmouth and elsewhere in England, all herring are sold by auction to the highest bidder—the auctioneer being responsible to the fishermen for the purchase money, less commission, which is generally about 3 per cent.—the auctioneer settling with the fishermen every Saturday.

Immediately on their arrival in the harbor the fishermen take a sample of their catch in a basket to the auctioneer, who at once calls a sale, at which the fish curers attend, when the fish is sold, as already stated, to the highest bidder. When the fish are sold the purchaser sends carts alongside the boats, and the fish are measured into the carts, 4 statute baskets to the cran. The cran contains a barrel and a-half of herrings. The fish are then emptied from the carts into large square shallow vats and sprinkled with salt, where they remain until a number of deliveries are made, and the herring-gutting girls commence work.

THE HERRING GUTTING GIRL.

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and packing of herring could not go on as it does at present. These girls come in hundreds from the Highland districts. While many of them belong to families of the poorer class, many of them belong to families who are better off, but who find it convenient to earn something in this way, annually, for the benefit of the family. These girls are a robust, able-bodied, respectable, modest, well-behaved class. They perform their work cheerfully, honestly and efficiently. They require no scolding, they indulge in no levity of manner nor trifling, and often in the afternoon, when most other women would be used up over the hard work, some one of them will start up a lively Highland song to help the time and the work along. When off duty and dressed up, they would never be taken for herring girls. They work in crews, each crew consisting of three girls. The work of gutting and packing is done with amazing rapidity and dexterity. An expert and experienced crew of three girls can gut and pack 80 barrels of herrings in one day. And be it remembered that the Scotch herring barrel contains 250 to 275 lbs of herrings, while our Canadian barrel contains only 200 lbs. of fish, so that 80 Scotch barrels would be equal at the very least to 100 barrels of Canadian herrings. We saw a Wick girl who had packed 80 barrels in one day. When at work, one girl, the head of the crew, packs, the other two gut or gibb the herrings. The head girl of each crew has a number. This number is written in blue or red chalk or pencil, by the cooper, on the bottom of every barrel filled by the crew: so that in the event of improper or defective curing and packing appearing at the time of inspection, the same by means of the number can be traced to the crew whose work it is, and all the fish packed by that crew in the lot undergoing inspection can be laid aside for examination instead of having to examine the whole lot, comprising the work of a number of crews. In this way the work of inspection is not retarded, as would be the case if the evil could not be localized, but is really facilitated. These girls are paid so much per barrel, generally 6 pence to 8 pence sterling, about 14 to 16 cents of our money, at which rates they can make good wages, when fish is abundant.

In the British report already referred to, the late Mr. Frank Buckland says:—“Herrings are classed into what are called ‘Matties,’ a word of Dutch origin, believed to signify ‘Maidens.’ They are immature fish, with the milt and roe undeveloped. They are principally sold in the Russian market, where they are regarded as a great delicacy, and the great Russian families are in the habit of obtaining for their own use, an early barrel of Scotch ‘Matties.’”

“The other designations are ‘Fulls’ and ‘Crown Fulls,’ terms used when the fish are partly full and full of milt and roe. And the term ‘Spent’ or ‘Shotten’ is used to designate herring immediately after they have spawned. These latter fish being of an inferior quality receive an inferior brand, and are branded as ‘Spent.’ They are sold at a lower price, but are readily sold in the great continental markets.” This classification still prevails, and nearly all the newly caught herring we saw consisted of those four kinds of herring, not separately, but mixed up in almost single catch.

It is the business of the gutting girl to separate the different classes of herring and this she does, as she proceeds with her work of gutting without interfering with the usual rapidity of the gutting operation. And so perfectly is the separation effected, that a fishery officer informed us that it rarely happened that a wrong herring is ever found in any barrel on inspection. In front of the herring vat, or four, into which she assort the herring as she guts them. Not only are great care and skill exercised in so perfectly separating the different classes of herring, but equal care is taken to exclude all poor, sickly immature fish—every unsound and bruised fish. The herring girls, the coopers, the fish curers themselves and the inspectors, all see to this. And this is most important, as experience has shown them that one unsound or damaged fish may taint a whole barrel, and one bad barrel may damage the character of a whole shipment. In Scotland, according to the Scotch mode, the gutting girls do not rip the fish at all, but the herring are gutted with a short, sharp, three-cornered knife, deftly inserted at the upper part of the gills

which takes away the fore fins, the gills, the stomach and the crown gut, all that will follow with one cut. The herrings which have previously been sprinkled are then roosed with salt and taken and packed in the barrels. The packer sprinkles a quantity of salt on the bottom of the barrel, then a tier or layer of herring packed slantingly on their back, as a general rule, with alternate sprinklings of salt and herring until the barrel is full, in the proportion of a half bushel of salt to the barrel, the whole quantity of salt, including the first sprinkling and roosing being about one bushel to the Scotch barrel, which is larger than the Canadian barrel. The kind of salt called "Rincom" is that much used and preferred in Scotland—the "Tripani" being preferred in America.

When the herring are intended for the Irish market they are packed flat on their sides, and when intended for the German market they are packed straight on their backs, belly upwards, which, by pressing out the sides of the fish laterally, certainly improves the appearance of the fish and gives it a better and plumper appearance than they had before. The fish, as with us, are laid in the barrels with the heads towards the staves, and the tails to the centre—the layers being laid across, alternately.

When the barrel is filled up it is, after settling some, headed up and left standing on end for 3 or 4 days to allow time for the settling, shrinking, or "pinning" of the fish. It is then unheaded, when the herring, which have settled 6 or 8 inches, or more, are found floating in pickle. This pickle is drawn off, and preserved in buckets, from the small bung hole in the side of the barrel, about 15 or 16 inches from the bottom, when the herring will settle still more in the barrel. A sufficient quantity of herring of the same day's catch is then taken from other barrels and carefully packed in to fill up. A small quantity of salt is laid on top of the last tier or layer of herrings. The cooper then takes the "dunt," which is a stout, round piece of wood, made to fit the inside of the mouth of the barrel, on top of the herring which have been repacked in to come above the top of the staves; he then, by standing or jumping on the "dunt," presses down the herring so as to insert the head, heads up the barrel, which is laid down on its side, bung-hole up, when the brine, previously drawn off, and which has been preserved, is replaced, the bung driven in, and the barrel allowed to remain on its side ten clear days, so as to allow the fish to mature, or season, before it can be inspected. For transportation, the tighter the herring are in the barrel the better they will keep. By the British Act of 24th, July 1851, 14 and 15 Vict. Chap. 26, the law which required herrings to lie in the barrel fifteen days after being refilled, and before inspection, was repealed, and the Fishery Commissioners were empowered to fix any other period and they accordingly reduced the time to ten days. This change was made principally to enable curers to make shipments, and realize on consignments or bills of lading five days earlier.

Results in the continental markets, as hereafter referred to, and as developed in this year (1889), seem to indicate unmistakably, together with other conducing causes, that the change was injudicious, and that the character of Scotch herring has been lowered at Stettin and elsewhere by placing in these markets, herrings immaturely cured and unseasoned. Each curer has his own private mark and name, as well as the Government brand; also the name of the inspecting officer and date of inspection, stamped on the barrels with hot iron brands. There is a small blow-hole in the top end of the barrel, by which the cooper, by blowing into it, can test the tightness of the barrel, and if found not air tight, he remedies the defect by the insertion of flags in the leaky joints.

There appears to be no compulsory rule as to the exact quantity of salt to be used. The fishery officer satisfies himself that sufficient salt has been applied for the preservation of the fish before he attaches the brand. For certain markets and for transportation a few more pounds of salt are used. One authority says that the British herring barrel should contain, when for home consumption, 235 lbs. of herrings, and when for the continental markets, 224 lbs. As already stated, the herring required to refill the barrels must be of the same day's catch, and if any of these look dirty or oily they are washed in salt water, but no

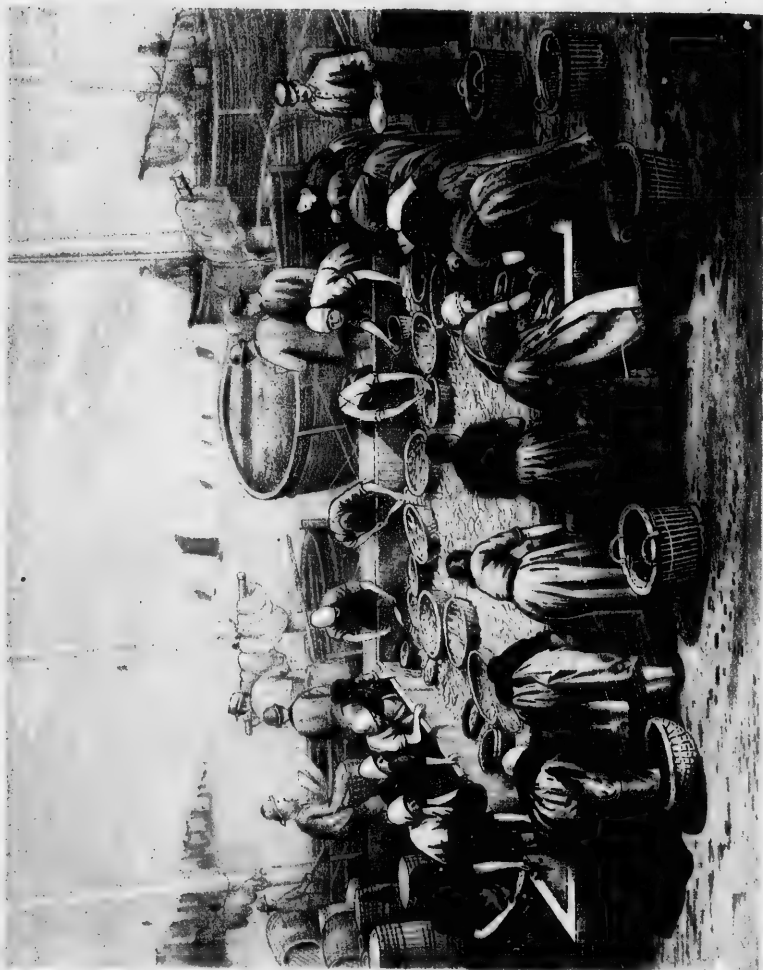
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water touches the rest of the fish, as it is universally held by all parties that washing before packing is most injurious to the substance of the herring, rendering it hard and brittle, and that by the use of water all the delicate, delicious flavor of the herring is washed away. There can be no doubt of this, as any one can prove who will fairly test the great difference between a fresh-broiled herring that has not touched water and a herring that has been well washed in water before cooking.

In the European markets the natural flavor of the herring counts for much, therefore, every effort is made by all the herring fishing nations, to retain that flavor.

So particular are the Dutch in this respect that in gutting the herring they use a knife differing in shape from that used in Scotland, having a larger handle and sharper pointed blade, which they insert into the neck between the gills and the bone, and then by turning the knife, they bring away the gills and stomach, leaving the crown gut or *appendices cæci*, which they consider materially improves the flavour of the herring. As a matter of course the gutting, after this mode, is done more slowly, and the packing more carefully; therefore we may infer that both are better done. Any degree of superiority which Dutch-cured herring are said to possess over the Scotch-cured article is not due so much to any substantial difference in the respective modes of curing as to the greater care and pains taken in the different departments of the entire process of curing and packing, and negligent carelessness on the part of some of the Scotch curers. Sometimes the Dutch adopt a fanciful mode of packing the herring in the barrels, placing the head of one to the tail of the other, instead of tail to tail, the common mode, but laying the subsequent tier across the previous one. At other times they pack the herring in circular form around the inside of the barrel, commencing at the outside of the circle, next to the staves, and filing up the layers towards the centre. This latter mode of packing may be for the purpose of facilitating the packing of herring into the small kegs, hereinafter referred to, and to give the contents of these kegs such a neat and artistic appearance as could not be secured in the case of the ordinary stiff, straight herring, packed in the usual way.

The Dutch are particular in skimming off any oil or greasy substance that may gather on the top of the pickle in the barrels, as the oil is held to injure, by rust or otherwise, herrings kept for any length of time. Mr. Mitchell, in his book on the herring, says:—

"Having carefully observed the system of curing practised by the Dutch, both on our own coasts and elsewhere, it may be stated that the curing of herring, as soon as caught, with superior salt in oak barrels, may be the cause of the Dutch herring having obtained such a high character."

THE BARREL.

The Scotch herring barrel is a substantial, well-made package. It is made principally of hardwood,—oak, birch, white ash, maple, and the harder species of larch and spruce. The staves come chiefly from Norway. Oak is the best, and is nearly the only kind used by the Dutch. Hardwood is preferable, being stronger, and also because it does not sour the pickle, as softwood does. In consequence of the scarcity of stave wood, the regulations have been relaxed, and spruce and larch are now allowed to be used, but the staves must be heavier. The hardwood stave is $\frac{5}{8}$ of an inch thick in the barrel, head and bottom about $\frac{7}{8}$ of an inch thick when cleaned. The bottom end of the barrel is full hooped, whereas the top end is only quarter and end hooped—three quarter hoops and four end hoops—on the bottom end eleven or twelve hoops. In many instances now one iron hoop, 2 inches wide, and $\frac{1}{16}$ to $\frac{1}{8}$ of an inch thick, takes the place of the four end hoops. This iron hoop on the top end is an improvement suggested by one of the fishery officers in Scotland, and has been very generally adopted. It greatly protects the chine of the barrel *in transitu*. It greatly facilitates the unheading and heading of the barrels. One of the oldest and most reliable fish-curers in Scotland told us that a cooper can unhead and head three or four barrels with the iron hoop in the same space of time as would

be required to do one barrel with the wooden hoops, and that by the use of the iron hoop the staves can be drawn tighter together than with the wooden staves, because it can be drawn tighter without breaking. This gentleman, one of the largest fish-curers in Scotland, has adopted the iron hoop, together with many others. In some places where it was adopted its use has, in some cases, been abandoned, and in some places opinions differ as to its value. We think the objections made to its use arise more from a sort of prejudice against all innovations than from any well founded reason. We heard of only two objections to the use of the iron hoop: one was, that the roughness of the outer edge of the iron hoop, caused by the iron driver used by the coopers, hurt the hands of those engaged in handling the barrels; the other was, that if the iron-hooped barrels full of herring were kept over for two or more years, the action of the salt on the iron hoop would corrode, not only the hoop, but the wood of the chine under the hoop, so rendering it weak and liable to break in the course of transportation. The use of a stout glove or mitten would meet the first objection, and the fact that the iron hoop is iron painted to prevent rust, and that it very seldom happens that herrings are kept over for two years, disposes of the second objection. So careful has the Fishery Board of Scotland been in regard to the handling of herring barrels that the use of can hooks was prohibited; but this rule must be relaxed now, for we saw great quantities of herring barrels lowered into the holds of vessels by the use of can hooks. The Scotch herring barrel must contain not less than 27 Imperial gallons. Half barrels are permitted, if made of the legal size. Under the permission granted as to the use of certain soft woods for herring barrels, the fishery officers in some places found that they had to deal with a new offence. They found, with reference to the soft wood barrels, that staves and headings were made so thick as to interfere with the capacity of the barrel, and so reduce the quantity of fish which the barrels should contain. Seizures were made and barrels confiscated, because of these attempts to impose upon the purchaser. The matter was discussed in the press and brought up in Parliament in August last (1889), when the Government promised to bring in a Bill next Session regulating the herring barrel, and establishing a fixed standard for the same. Hitherto, this has not been done, the regulations referring only to the minimum size. The maximum size had not been fixed. While the law, according to Mr. Mitchell, has been that a barrel of herring for home consumption should not be less than 235 pounds, exclusive of salt, and for export to the European markets not less than 224 pounds, as a matter of fact some barrels contain 260 to 275 pounds of fish and salt. The weight of a barrel of herrings will vary, if properly packed, because one class of herrings differs from another class. This was tested while we were in Scotland, the "Crown Full" proving the heaviest, and the "Spents" the lightest, "Matties" and "Fulls" being intermediate. The difference in weight ran from 15 to 25 or 30 pounds per barrel.

In his reply to questions sent out in 1869, already referred to, Mr. Gordon, of Pictou, a practical and intelligent Scotch herring cooper, at one time says:—"That herring barrels should be made of white ash, elm, maple, yellow birch, clear of sap and heart, and that haematac or the Norway larch is used by Scotch curers." He prefers oak where it can be had, and holds that hardwood staves retain the pickle without "souring" it. Mr. Mitchell, of Scotland, in his book, in one of his suggestions for the improvement of the herring fishing, says:—"Encouragement should be given to the fish curers to cure the herring in oaken barrels; the Dutch do not generally use any other. We are of opinion that oak is not only, for its strength and retentive qualities, the best suited for the purpose, but that there is also a preservative quality in this wood, and that it moreover imparts a pleasant flavor to the herring."

THE CANADIAN HERRING BARRELS.

In order to have the opinion of competent experts in Scotland, as to the sufficiency of our Canadian herring barrels, we took with us a new barrel from Halifax—a barrel of average make—neither the very best nor the very worst. The barrel

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was exhibited publicly in the principal business street of the town of Wick, and the "Monthly Herring Circular," published at the office of *The Northern Ensign* newspaper of August 31, 1889, gives its opinion of the barrel as follows:—

"We have seen the sample herring barrel brought over to this country by the Canadian delegates who are here enquiring into the different modes of curing herring. If this barrel is a fair specimen of barrel manufacturing in the Dominion of Canada, there is certainly room for improvement. It is a rougher article of the kind than Scotch coopers put through their hands, and it is also less substantial than the average Scotch herring barrels. The Canadian gentlemen would do well to take back with them a sample of the work done at one of the Wick cooperages, and the coopers in Canada will then be able to compare notes, and see wherein they fall short of their brother handcraftsmen in the Old Country."

Since the above was written the Canadian barrel has been examined by experienced fish curers and coopers. While admitting that the workmanship of the barrel is passably fair, with the exception of the hoops, the hoop knots of which are too short, and therefore apt to spring asunder, and while they consider the barrel sufficient to contain herrings on the spot where packed, they all consider it too light and too weak for purposes of transportation, especially by railways or other modes of conveyance where all kinds of freight are very roughly handled. They consider the staves altogether too thin, and the hoops too few, there being only 4 hoops at each end and 3 hoops on each quarter, 14 hoops in all; while on the Scotch or British barrel there are 11 hoops on the bottom end, 4 on the upper quarter and 4 on the upper end, being 23 hoops in all; or where the iron hoop is adopted, the iron hoop standing for the upper 4, 19 hoops in all.

HERRINGS IN SMALL PACKAGES.

The Germans and Dutch—the Dutch especially—have for some years been doing quite a large and lucrative business in herrings re-packed from the large barrels, put up in packages of small size, which are sold under the name of Dutch herring. Considerable quantities of these are consumed on the continent of Europe, and large quantities are exported to the United States, where they command a ready sale and good prices. The herring chiefly used for this business are the best brands of the Scotch-cured herring, the "Crown Fills" and "Fills." Stettin imports principally from the north and east coast of Scotland—the west coast herring nearly all go to Hamburg and Holland. The Germans re-pack chiefly into half barrels and quarter barrels, there being a great demand in Germany for packages of that size for family use. The packages used for this purpose are of substantial make, having nothing of a fancy appearance. The Dutch re-pack into neat, fancy looking packages, chiefly of one-eighth and one-sixteenth of a barrel. The Germans re-pack the fish as they come out of the barrels; the Dutch separate the fish—the male or milt fish from the female or roe fish—putting the roe fish into one keg and the milt fish into another. The milt fish retails at 25 cents more than the roe fish, and the white hooped keg retails at 25 cents more than the dark hooped keg. In re-packing, the original brine from the original barrel is used for the small kegs, and should there be a deficiency it is made up with new brine; but the new brine should be used as sparingly as possible, as it hardens the fish and takes away much of the natural flavor of the herring. The dark hoops are hoops with the bark on; the white hoops are hoops made of the white or yellow cultivated willow, which is extensively cultivated in Europe for basket-making, fancy hoops, &c., with the bark peeled off. The smaller kegs are principally machine-made, and are sold very cheap.

Successful attempts have been made in England and Scotland to put up herrings in this way for the American market, but it was found that the Dutch had secured such a footing in that market that some effort would be necessary to push the British article. The business was not pushed and it died out. This season (1889) a leading fish curer in Wick has decided to engage in this branch of the herring business, and for this purpose imported many thousand small kegs, one-eighths and one sixteenths, from Holland. He had them brought over by a ship in ballast, at a

low rate of freight, on condition that he would give the ship a return load of Scotch herring.

The total quantity of herring imported into Germany annually is about 400,000 barrels. Of this quantity about 200,000 barrels are imported into Stettin, and the export of herring from Germany to the United States is about 40,000 barrels. The exact imports of herring into Holland we could not exactly ascertain but, as already stated, the Dutch import considerable quantities from Scotland, and catch large quantities of herring themselves. They export largely to the United States, principally, we understand, in small packages, and probably about as much as Germany, or more. These small Dutch kegs of herrings—white and dark hoop, separated milt or roe fish—are now imported from New York into Canada, at Montreal, Que., and Berlin, Ont., and are much in demand wherever anything is known of them. In the latter town they are much sought after by the well-to-do Germans of Waterloo County. There is no mystery in this branch of the herring business.

Knowledge which comes by observation and experience, together with experience, and common sense and good judgment, are required. In order to establish and to maintain a good character for the fish thus put up, special care and attention must be given that the fish taken to fill up these kegs with is of the best quality—that the re-packing is carefully and properly done—that the fish has been properly seasoned and "pined," and that in re-packing the fish should be as little exposed to the atmosphere as possible—that is, as soon as a barrel of herring has been opened it should be re-packed into the kegs with all possible expedition—so as to avoid any action by the atmosphere on the contents while exposed. The herring taken to fill these small kegs should be at least several weeks old, and also it should be seen that no inferior or bruised herring should be used.

We were informed in Stettin that there is a great demand in Germany for herrings put up in half barrels and quarter barrels, for family use, and that the sale of herring in that country is very materially increased by having much of the Scotch herring put up in that way. We ascertained that, in reference to these small packages, much diversity of opinion exists among dealers in various countries and localities as to the most convenient and most desirable sizes. Some localities preferring one size, some another. It is considered prudent by those who think of entering into the business to find out, by enquiry, the sizes preferred in different places or by different dealers, and as nearly as possible to meet their wishes. In Britain the arrangements by the dealers from the largest wholesale dealer to the smallest huckster, are very complete, and the distribution is made expeditiously and perfectly. Each retailer has his regular customers, can tell to a nicety how much fish he requires, which is dealt out to him promptly by the middlemen, who purchase from the large dealers. In this way the public are promptly supplied, and very little fish is ever lost.

BLOATERS.

Although we arrived in Yarmouth out of the fishing season, and had not therefore an opportunity there of personally observing the various processes of manufacturing bloaters, yet from several reliable sources we procured all necessary information on the subject, and afterwards in Scotland we had the opportunity of seeing the process, as carried out in the curing house of one of the largest curing firms in Britain. Yarmouth is the great centre of the bloater manufacture in Britain, not only as to quantity but also as to quality. Although excellent bloaters are put up in many other localities, the Yarmouth bloaters seem to be the favorite bloaters in the London market. We saw large quantities of bloaters in Billingsgate market, London, manufactured in Lowestoft, Shields and other towns in England. In fact the bloater branch of the great herring industry is a very extensive business. The number of bloater manufacturers in Yarmouth alone is very great, and all find a ready market for their goods, although a few are said to excel, and for whose bloaters there is always an active demand by the first fish dealers of London.

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Yarmouth possesses one great advantage over many other localities in the bloater line, because the quality of the herring taken by the fishermen of that place in October and November is exactly adapted for the manufacture of bloaters, and no doubt the season of the year, the weather being then cold, is also favorable to this branch of the business.

One of the best bloater curers in Yarmouth informed us that one reason why his fish stood so high in the market was, that he was always very careful, in the first place, to select the very best fish for the manufacture of bloaters, reserving for other purpose all inferior and unsuitable fish. Then he is very careful in salting, curing and smoking them. We saw in the fish stores in Yarmouth, also on Billingsgate market in London, and on the tables in the hotels, a bloater very slightly salted, and smoked so slightly that there was no discoloration at all of the herring. This bloater so prepared is a most delicious fish. It is prepared in this way for immediate use in the nearest cities, towns and country places, and will only keep some three or four days. Other classes of bloaters, intended for consumption at greater distances, and therefore designed to keep longer, are more highly salted, smoked in various grades. The bloaters we saw were fairly fat, but very fat herring will not do for bloaters. Bloaters are salted in heaps on the stone floors of the warehouses—some for a few hours, some for one or two days or more. They are never so highly smoked as the mildest red herring. There is no difficulty in manufacturing bloaters. All that is required is intelligence, good judgment, quick observation, and honesty of purpose, together with a knowledge of the tastes of the consumers; and also whether the fish is required for immediate use near by or for exportation to places at a distance. The gentleman who gave us so much information said that first of all he required to know exactly the kind of bloater required, and that he then did his best to supply the article. When the herring have been quite sufficiently salted they are then washed clean on the outside, but are not opened, gibbed or gutted. They are then strung on rods and hung up to drip and dry, and then smoked. The fuel preferred in Britain for smoking purposes is the sawdust, or the waste from the turning lathe of birch, although oak and elm are sometimes used. All agreed that the birch made the sweetest smoke. The white bloaters put up for immediate use are packed in neat, light boxes containing 50 herrings each. Those more highly salted and smoked, are put up in larger packages. The bloaters we saw were considerably smaller than our own herring; they are deep from back to belly, and are an excellent fish. Too much attention cannot be given to the selection of the herring used for bloaters and to the respective curing processes. The excellence of any particular curer's bloaters does not arise from any special mode of curing, but from special care and attention, together with that practical knowledge which close observation and experience alone can confer. At the hotel the bloaters were opened and split from the belly to the back bone, the gills, gut and stomach taken out, and the herring, without being washed, cooked with the milt and the roe. The roe furnishes pleasant eating.

In the case of bloaters for immediate use, the herring may be put immediately after being landed and selected, into a strong pickle from six to eight hours. They are then put on the spits, and washed by dipping in large tubs of salt water or very weak brine, and then hung up in the smoke house. The fires should have been burning previously, therefore emitting only a slight smoke. A few hours—six to ten—in the smoke room will suffice. They should be cooled off before being packed for the market.

The bloater business in Britain is simply enormous, and uses up an immense amount of herrings, thus greatly benefitting the fishermen and the curers, who realize at once on this branch of the herring industry, while the public are supplied with herring in an agreeable and popular form.

RED HERRINGS.

There is not so much activity in this branch of the herring industry, either in Britain or Canada, as formerly. The cause of this is said to be want of inspection and great negligence and want of care in curing and packing the fish. We were

informed that the shipment from Canada to Britain of inferior smoked herrings did great injury to this trade.

Mr. Mitchell, in his book, treating of the trade in red herrings in Britain, says :—
 "The trade in red herrings was formerly much more considerable than it now (1864) is; at almost all the principal fishing stations large buildings were erected for the purpose; but excepting at Yarmouth, the trade has diminished considerably. This may be attributed to there being no legislative enactments applied to the curing and preparation of red herrings, in the same manner as applied to the curing of British white herrings. The consequence has been that the purchaser can have no confidence in the quality of the herrings nor in the size of the barrels, and therefore merchants at home and abroad do not purchase cargoes as merchandise; and the curers, as is the practice at Yarmouth, must export the red herrings not used in this country to foreign countries for sale on their own account.

"In explanation of the preceding remarks, we have to quote an extract of a letter from a house which ventured to purchase a cargo of herrings, to prove that neither respectable names, nor even a judicious selector, can guarantee the merchant who buys, that the article intended to be bought has been purchased :—

"We think it fair to admit that we are thoroughly persuaded, although we are strong advocates for free trade when it can be properly carried out, that the curing and preparing of herrings is of such a complicated nature that without the superintendence and care of the fishery officer, mercantile transactions could not be carried on safely to any considerable extent, and we shall give you an exact account of our dear-bought experience to prove this.

"We sent one of our fast sailing coppered schooners to one of the principal places for red herrings to load a cargo purchased by us. One of ourselves went and examined the different kinds of red herrings for sale in the hands of the most respectable curers. He saw many casks opened, and thought he had bought the quality necessary; but to make assurance doubly sure, we engaged two of the leadings agents at two neighboring ports to examine the parcels purchased, at shipment, so that error or fraud might be prevented.

"The captain, a most intelligent man, was also acquainted with the qualities of red herrings, and to him we confided the shipment for sale. He went to sell his herrings, and when he began to deliver them to the buyers it was found that the barrels generally contained a better kind on the top; that refuse qualities were in the middle; and, although we bought the whole cargo as well-packed barrels of 'Full' herrings, the barrels when emptied out by the buyers were found to be very inferior, to our serious loss, namely, part of the herrings were not properly cured, and part of them were 'Shotten' or 'Spent' herrings. From that time we resolved neither to buy red herrings for ourselves nor to take the responsibility to buy them for our correspondents abroad, and we do not know any one who would do so who knows the trade. We attribute the inferiority of the quality partly to the reckless conduct of the servants of these curers, who really sold a fraudulent article; and until the fishery laws are extended to the curing of red herrings we do not think this trade will flourish."

"We think it right," Mr. Mitchell says, "to quote this letter, and to remark, that if such difficulties arise as to making red herrings a staple article, which can be, comparatively speaking, easily examined in the barrels, how much more difficult it would be, if our British white herring trade (the barrels with the herring lying in salt and pickle) were left to the frauds, blunders and ignorance of curers. We admit that the name of the honest curer might go far to secure quality in some cases, but there are so many circumstances connected with curing herrings that we do not know any security sufficiently strong in the most honest curer that would guarantee to the buyer that perfection of quality which is obtainable by our fishery laws."

It is quite possible and very probable that the red herring industry has suffered from due regard not having been given to the selection of the fish used for this purpose, and it may be that fish rejected for bloaters may in many cases have been used for red herring. If so, then this has been a great mistake. Sound, rejected herring,

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if used at all, should be utilized as pickled herring and sold for what they really are, but all unsound, sickly or bruised fish should be thrown away. In order to retain the red or smoked herring trade, just as much care and pains are necessary as in the case of bloaters. In addition to carelessness in the selection of the fish, the red herring industry has also suffered from careless washing of the fish, and the use of too much salt, heat and smoke. As has been remarked in the case of bloaters, herring should be prepared with a view to meet the different tastes of the consumers in the respective markets to which red herring are exported. Care should also be taken to have the fish properly packed, and properly cooled off before they are packed.

The fish curer who gave us so much information in Yarmouth informed us that he had been recently opening up a trade with some parts of Italy in the red herring line, and that the demand in some places there is for a herring smoked to the color of a sovereign or other coin of gold, whilst in some places they require them to be pretty well browned, and in other places they will have them nearly black. All these matters of detail are important, and will be attended to by the intelligent, enterprising curer and dealer.

Herring intended for smoking may be salted either in heaps on the floor in dry salt, or in vats in pickle, for periods of one, two or three days. They are then put on the spits, round pieces of wood capable of holding about 20 herrings run through the mouth and gills of the fish, they are then washed in large, square boxes or vats, wide enough to admit of the two ends of the spit resting on each side of the vat. They are then hung up to drip and dry for a day in the open air, or in the smoke-house before the fire is applied. Herring for home consumption are smoked from ten to twelve days, and herring for exportation are smoked from fourteen or fifteen to twenty or twenty-one days. The extent of the heat and the amount of the smoke are regulated with a view to the color desired for the fish. It is said that herrings can be given a bright yellow color by the use of oak sawdust, after the fish have been smoked for some time with smoke from other wood.

The statistical return shows a very heavy falling off, in 1888, in the exportation of smoked herring from Canada, as compared with 1887.

KIPPERED HERRING.

There is a very large business done in kippered herring in Britain. Herring put up in this way are in great demand everywhere, and are preferred by many to the bloater. The very best herring are required for the kippering process. The herring of the west coast of Scotland are in great request for this purpose. The fish used for kippers should be had as soon as possible after they are taken out of the water. They are then carefully selected as to size and quality. Where we saw them at work an active girl stood at a bench laying the herring on its side with the back towards her; with two cuts of a sharp knife she split it from mouth to tail, and with a third motion of the knife she scraped out the stomach and gut, and any loose blood inside the fish. She did her work with great rapidity. The herring were then placed carefully into vats of pickle, where, being for immediate use, they remained for 35 minutes, then carefully taken out and placed in baskets to drip. They were then spitted on fine rods, containing from 12 to 20 herrings each, and hung up in the smoke-house and smoked for a few hours—5 or 6—then cooled off and packed up in small boxes and dispatched to London by train before midnight of the day on which the fish were caught. When the fish are intended to be kept longer more salt and more smoke are applied. Where circumstances are favorable kippering may be carried on to advantage either on a larger or smaller scale. Herring put up in this way are most delicious. They cost a trifle more because of the extra labor and the greater care requisite in handling them. The same materials are used for smoking kippers as are used for smoking bloaters, and the same conditions apply, only that kippers, presenting a larger surface to the smoke, as they do, do not require to be so long exposed to the smoke. As in the case of bloaters and red herring, the tastes of the consumers must be ascertained, and the curing as to salt and smoke regulated accordingly. The manufacture of kippers is

greatly on the increase in Britain. It is an important branch of the herring industry, and utilizes a large proportion of the British catch of herrings.

INSPECTION.

From sundry incidental allusions and references in the foregoing pages it will be seen that much importance is attached to the twin subjects of inspection and brands by able men, competent to judge, who have devoted much attention to the whole question of the herring industry, and whose opinions, founded on practical experience, are entitled to favorable consideration.

From what follows it will clearly appear that a very large number of those most conversant with our own herring fisheries, and the great importance of the herring trade of the Dominion, fishermen, fish merchants, fishery inspectors and overseers, master mariners, collectors of Customs and others, were strongly in favor of a system of inspection thorough, impartial and reliable, and that the same should be compulsory.

One of the questions sent out by the Committee of the House of Commons in 1869 was in the words following:—

Question—"Is an inspection of fish necessary, and should it be compulsory or otherwise?"

In his answer to that question, *D. Thompson, M.P., Haldimand, Ont.* says:—
"Inspection is very necessary."

C. E. Anderson, Merchant, Toronto:

"In the western part of the Province, I speak particularly of Toronto, the present mode of inspection is looked upon as of little or no value, and no guarantee of quantity, I cite an instance: About a month ago I had on sale in Toronto, from Quebec, 200 barrels No. 1 herring, worth in Quebec \$6 to \$7 per barrel. I offered them to the dealers in Toronto at \$4 per barrel in Quebec, and would have taken \$3½, but could not get a bid, the cause alleged being that they could not depend on the curing or inspection, and that ten chances to one they would have to throw them all into Lake Ontario, as was the case almost every season in Toronto with many dealers. If inspection was compulsory, it would have a most beneficial effect on this most valuable branch of industry, especially in Ontario."

Mr. Dumaresq, Merchant, Gaspé Basin:

"In my opinion it is necessary that all kinds of fish should be inspected, more especially all pickled fish, and that all fish arriving at any market without having been first inspected should be inspected at the expense of the owner. This would remedy the great evil of having so much bad and inferior fish in the Canadian markets, from the Gulf ports, not only bad in quality but short in weight. I have known fish shipped to Quebec that was only fit for manure. Had that fish been inspected before being shipped it would have been rejected; or had it been inspected on arrival in Quebec it would have been confiscated. Compelling the shipper (or owner) to have fish inspected either before shipping or on arrival would be the means of preventing bad and inferior fish being shipped. Only practical men should be employed as inspectors."

P. Enright, Fisherman, and others, Gaspé Bay:

"The inspection of fish of all kinds would be very necessary and beneficial to the fishermen."

Mr. La Parelle, Merchant, Cape Cove, Gaspé:

"The inspection in Quebec should, in my opinion, be rigidly attended to, especially of green and pickled fish, which is put up in such a slovenly manner by many parties on the coast that it must disgust purchasers, reduce consumption and eventually ruin the market."

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Mr. Baudin, Grand River, Gaspé, Fisherman:

"Inspection is necessary and should be compulsory. The inspector should continue on the ground and maintain immediate superintendence."

Mr. Stors, Merchant, Gaspé:

"Inspection of pickled fish is necessary, and should be compulsory."

Mr. Price, Fisherman and Farmer, Little Gaspé:

"Inspection necessary and should be compulsory."

Mr. Chiasson, Fisherman, Magdalen Islands:

"Inspection is, perhaps, required, but should not be compulsory."

Mr. Cormier, Trader and Farmer, Amherst:

"Inspection may be necessary without being compulsory. In the latter case it might be liable to abuse. The inspectors might be partial, or trade in fish themselves."

Mr. Grenier, Municipal Councillor, New Port, Gaspé:

"The inspection of fish is absolutely necessary, and should be compulsory. Great advantage would consequently accrue to the fisherman in the sale of his fish."

C. C. Fox, Collector, Gaspé Basin:

"A compulsory inspection of all pickled fish exported is absolutely necessary if the Government wish to develop an important branch of foreign trade, and for the security of consumers the same measure is necessary in the home markets."

"I have seen the pickled fish of the Maritime Provinces, the United States and that prepared at Wick, in Scotland, and I have no hesitation in saying that that put up in the Province of Quebec is the worst; badly salted, badly cleaned, badly pickled, badly barrelled and almost invariably short of weight. In the Magdalen Islands, where between 100,000 and 200,000 barrels of herring and a large quantity of mackerel are annually taken, I have seen herring taken from the same seine, by Magdalen Island and Nova Scotian fishermen, and some months later I have seen the same fish sold in Halifax, when that put by the Magdalen Island fishermen brought about 50 percent. less than the other, solely from the difference in curing. Nova Scotian herring and mackerel are advertised and fetch a higher price in Quebec and Ontario than those cured by the Quebec fishermen, although the mackerel are from the Gulf and the herring from Labrador and New foundland; because for some time there was a compulsory inspection of pickled fish in Nova Scotia, and although the law was repealed several years ago (contrary to the opinion of many good judges), the people had acquired the habit of making good fish."

"All pickled fish is prepared by the fishermen themselves; you cannot see what the barrel contains, and the system of large advances in vogue in the fishing districts induces the merchants to take gladly anything he can get to help liquidate his debt, without being particular as to quality."

"The inspection should be compulsory, because fishermen, as a class, have but little ambition or foresight. Self-interest is but a feeble influence with them, and although they know that better fish would command a higher price, ninety-nine out of a hundred would prefer a small profit and little trouble to greater care and a larger return. At the same time, it cannot be too strongly insisted upon that if inspection is to produce a proper effect the salary attached to the office of inspector must be high enough to induce competent men to fill it. Under the Fishery Act of the late Province of Canada all fish taken by licensed vessels was inspected. But how? In the Magdalen Islands the inspector very properly inspected and weighed each barrel. The consequence was that many refused to have their fish inspected by him preferring to take it to Quebec, where, they said, by paying a small fee, the inspector

would open three or four barrels, and then give them a certificate for the whole. I know another inspector in this district whom no merchant would consider competent to cure his fish, and who never saw any but the miserable fish put up on this coast, and I have known him (a sworn inspector) to give certificates of the quantity and quality of fish that he had never seen or been within twelve miles of."

J. W. J. Fox, Collector, Magdalen Islands :

"I do not think an inspection of fish necessary at the places where the fish are caught, unless they are to be exported to a foreign market; but an inspection of fish is very necessary and should be compulsory in the ports of the Dominion on importations for consumption or foreign market."

Mr. Riverin, Fisherman, Malbaie :

"Inspection of fish is necessary, but if compulsory would sometimes be productive of injury."

Mr. Bonique, Merchant, and others, Grindstone Island, Etang du Nord :

"Inspection necessary, and should be compulsory."

Mr. Sirois, Merchant, L'Islet :

"The inspection of fish is most essential, and should be obligatory, but the inspector should be fully competent to discharge his duties."

Mayor Painchaud, of Magdalen Islands, Amherst :

"Inspection should be compulsory. The question is where it should take place? I say in the place where the fish is taken and sold in the first instance."

Mr. Whalen, Fisherman, Gaspé :

"Inspection necessary, and should be compulsory."

Mr. Dimock, Farmer, Bonaventure :

"I would say, in order to bring our Bay of Chaleurs herrings into good repute, a compulsory inspection is necessary."

Quebec Board of Trade :

"We are strongly of opinion that the compulsory inspection of fish and oil is a necessity, and have frequently urged the Government to enact such a law."

Hon. J. Ferguson, Senator, Bathurst :

"Inspection absolutely necessary and should be compulsory."

Mr. Mathews—Letête, Charlotte Co.—Fisherman :

"I believe the inspection of fish is necessary and should be compulsory, as it would prevent the sale of a great quantity of poorly cured fish, the sale of which has a tendency to injure the reputation of those who might be innocent of carelessness in this respect."

Mr. Heney, Fisherman, Deer Island, Charlotte :

"The inspection of all kinds of fish is necessary and should be compulsory. All parties who put up pickled fish of any description should have the owner's name on each package before selling; and when the inspector inspects them, he should put the brand on them of the quality they are, and his name. There is a great deal of fraud practised in putting up pickled fish of every description. Smoked herring should also be marked and branded in the same way, as there is a great deal of fraud in putting up smoked fish as well as pickled. Both pickled and smoked fish are often sold as good and merchantable, when in reality quite unfit for use."

J. and S. Leonard, Fishermen, Deer Island, Charlotte :

"Inspection is necessary, and should be compulsory."

D. W. Stewart, Collector, Dalhousie :

"Inspection might tend to establish a character for excellence that would be desirable, but if attended with heavy cost would prove an annoyance and tax on the trade."

Collector Robertson, Moncton ; Collector, Hickman, Dorchester ; Messrs. Cormier and Bourgeois, Fishermen, Cocagne :

"Inspection necessary, and should be compulsory."

Messrs. Snell, Light-keeper, Campo Bello ; Tory, Fisherman, Guysboro' ; Challoner, Aspy Bay, Sidney, Fisherman ; Huston, Liscombe, Guysboro' ; Fisherman, and Pride, St. Mary's River, Fisherman :

"Inspection necessary, and should be compulsory."

Collector Perry, Beaver River :

"I think inspection of pickled fish necessary, and should be compulsory, as our local inspectors seldom act."

Collector De Wolf, Horton :

"Doubtless fish exported would sell better if inspected."

Collector Thurber, Freeport :

"Inspection necessary, but should not be compulsory."

Mr. Gordon, Pictou :

"Inspection should be compulsory for exportation and the home market."

Mr. Wylde, Merchant, Port Mulgrave :

"Fish should be classed and inspected. Inspection should be compulsory."

A. M. Rudolph, Harbor Master, Montreal :

"Inspection necessary and should be compulsory."

Mr. McDonald, Collector, Port Hawkesbury :

"Inspection necessary, and should be compulsory."

Collector Ross, Port Margaree :

"Inspection necessary, and should be compulsory."

Collector Sargent, Barrington :

"I think a strict inspection necessary, and it should be compulsory."

Collector McNeill, Kelly's Cove ; and Mr. Bell, Shipmaster, La Have :

"I think inspection necessary, and should be compulsory."

S. T. N. Sellon, Fishery Officer, Liverpool, N.S. :

"An inspection is necessary to give confidence in a foreign market, and should be compulsory."

Mr. Starr, Fisherman, Cornwallis :

"I consider an inspection of fish highly desirable, and it should be made compulsory, in order to prevent an inferior article from injuring the sale of our fish."

Mr. Ross, Merchant, St. Ann's, Victoria :

"Inspection law to be generally useful should be compulsory."

Collector McAulay, St. Ann's, Victoria :

"Inspection is generally useful, causing fishermen to cure their fish in a better manner."

Of some 70 answers made to Question No. 6, in 1869, as to the necessity of inspection, only eight replied in the negative. Two replied contingently, not considering inspection necessary in their own immediate localities.

One gentleman says that the inspection should be made by the present fishery officers of the Dominion.

Another says that inspection would be very beneficial to the fishermen, provided the Government would pay the expense; otherwise, it would only crush them closer to the ground.

(The fee for inspection and branding in Scotland is 4 pence sterling, or 7 cents, per barrel, which has to be paid beforehand by the fish curer, who has to give notice of the number of barrels of herring ready for inspection and branding, and to deposit the amount. Should any of the number be rejected, the fee for such is refunded. The inspection and branding is performed by an officer of the Fishery Board of Scotland, who has to affix his name with the brand, and who is held responsible for his work).

Another, who considers inspection unnecessary says, that "the purchaser should be his own inspector, and that if incompetent, he should not engage in the trade."

(This does not seem reasonable or business-like. On mercantile grounds, the seller and purchaser should know what is being sold and bought. There is reason, however, to believe that many dealers act loosely in the matter of the sale and purchase of fish, and provided that there be a fair margin of profit the dealer is too often indifferent as to the quality. Were the case otherwise, and inspection compulsory in the first instance, there could not be a possibility of so much fish unfit for use reaching Quebec and Toronto as is stated in some of the answers to have been the case).

Another says:—"Inspection is not necessary, the fish being generally inspected on arrival in Quebec."

Another says that "the proper place to inspect is where the fish are caught, packed and sold in the first instance."

Another, who does not consider inspection necessary, considers that where the fishing grounds are so far from each other inspection would entail too much expense on the fishermen, and would therefore effect but little good.

Another, who considers inspection unnecessary, seems to arrive at this conclusion from the fact, as stated by him, that the inspectors are annually appointed by the General Sessions, and are, apparently, therefore, seldom called upon to act.

(If the officers were appointed by the Government this objection would have no force).

Another says, that "an inspection of fish is useless, as at present parties buy on the character of the seller, and generally examine a few barrels of the fish; that when an inspection law was in operation it was of no benefit, as no one would buy on the brand, as no confidence could be placed in it, and that frauds were practised to an immense extent under cover of inspection."

These answers and extracts show most conclusively the necessity of inspection, and of having the same performed by competent Government officers—and the necessity of having the inspection made where the fish are caught and cured—such inspectors being prohibited from trafficking in herring, and to be responsible for their work.

If inspectors could grant certificates of inspection for fish they never saw, and were never within 12 miles of, it is not to be wondered at that inspection has been held to be of no value, either as to quantity or quality.

The foregoing answers also show a very general and intelligent appreciation of the disadvantages under which the herring industry of the Maritime Provinces of the Dominion labored in 1869, in consequence of the absence of an inspection law for pickled herring, and a very widespread desire that this condition of things, still existing in 1889, should be remedied.

Towards the end of the 18th century, notwithstanding that much had been done in the way of legislation and bounties to stimulate and encourage the herring industry in Scotland, a careless negligence and indifference seem to have prevailed among the fish curers of that country. The Dutch were masters in the herring markets of the continent of Europe. Treating of that period, and after fully discussing the different modes or making salt, and comparing the Dutch herring laws with our own then existing laws, the Earl of Dundonald, in his able pamphlet "On the Manufacture of Salt, and on the Herring Fisheries," published in 1784, says:—

"The Dutch, in supplying the different markets, seem to pay attention to the condition the fish are in, to the purity and size of the salt, and to the season of the year. No such attention is paid in Britain; the season of the year, the condition the fish are in and the purity of the salt are all disregarded, and as the saying is, 'all is fish that comes to our nets,' and this will always be the case until proper regulations be made and strictly enforced."

Remarking on this, Mr. Mitchell says:—

"The wisdom of these remarks has been fully proved and established. Wise and salutary laws and regulations having been made and strictly enforced under the directions of a Board of gentlemen acting gratuitously, with practical men as inspectors on the spot, watching that the abundant supply of wholesome food shall be properly cured and packed in sufficient barrels; and thus the ignorant or dishonest curer is prevented from destroying his own trade and profit, and made to prepare the herrings in the best and most scientific manner."

The British Fishery Board was established in 1809. Subsequently a branch of this Board was established in Scotland, under the name of the Fishery Board of Scotland. This Board has done good work, it has an intelligent, active and experienced body of men, general and local inspectors and local fishery officers, thoroughly conversant with the duties devolving upon them, all capable and competent men. These are the officers to whom are entrusted the duties of inspection and branding in Scotland, and their entire honesty and impartiality have never been questioned.

Of this Board, the Commission appointed by the British Government, in 1878, to enquire into the herring fishing industry in Scotland, consisting of the late Mr. Frank Buckland, Spencer Walpole and Archibald Young, already referred to, in their report, thus speak:—

"The Scotch herring fisheries have for nearly 70 years been regulated by the British Board and the Fishery Board for Scotland. These Boards have exercised an important and beneficial influence upon the herring fishery of Scotland. In its carefully prepared annual reports it has accumulated a mass of accurate statistics relating to every point connected with that fishery, and it has trained up a body of officers of remarkable intelligence and energy to carry out the various duties of the Board at the different fishing stations in Scotland.

"The duties of the Board are to give clearances to herring fishery vessels going to sea; to receive notices from fish curers on shore of their intention to cure; to examine the measures for the delivery of fresh herrings as between buyer and seller, and the size of the barrel for cured herrings; to ascertain the quality of the cure; to brand the herrings accordingly, and to collect the branding fees; to attend to the exportation of the fish and inspect the exports, to see that they are in proper order; to maintain order on the fishing grounds, and to carry out the regulations for naming and numbering boats and their sails; to receive and restore lost fishing property; to build fishery piers and harbors, and to furnish returns and statistics of the herring fisheries in Scotland."

Between 1784 and 1857 the Scotch had outstripped the Dutch in the curing and packing of herring, and gained the ascendancy in the European markets, on account

of the improved quality of the Scotch-cured herrings. But in 1857 the Dutch established a Board similar to the Fishery Board of Scotland, and the Dutch Government then determined to take active measures to restore so important an industry, and what they did was to adopt, to a great extent, the regulations of the Fishery Board of Scotland. They constituted a Herring Fishery Board, composed of nine members, and introduced a system of inspection, and of marks or brands.

As the brand is so inseparably connected with the inspection of herring, we will now proceed to consider

THE BRAND AND ITS VALUE.

In some parts of Scotland we found that many of the fish curers labor under the disadvantage of having no sheds or shelter under which to protect the fresh fish from the sun, wind and rain, or to protect the herring in the barrels prior to and after inspection and branding. It must be evident to every one conversant with the injurious effects of the sun on all kinds of animal products exposed to its action, how detrimental to the herring it must be to have the barrels exposed for hours in the shallow vats while delivery is going on, and before the gutting commences, and afterwards to have the herring in the barrels, subsequent to inspection, exposed for weeks or months in the docks and quays without a particle of shade or shelter. We were not, therefore, greatly surprised to find in Stettin, the great continental market for Scotch herrings, that in some instances the Scotch brand was disregarded, while the herring of curers whose gutting, curing and packing we knew to have been done altogether under cover, and their herring in barrels afterwards stored in like manner, and without brand, pass unchallenged by the Stettin dealers, on the strength of the name and established character of the curers alone.

In Fraserburgh, Scotland, the whole process of delivery, gutting, curing, packing and storing is done under ample sheds, substantially built and slate-covered. In the herring curing yards of Messrs. Bruce & Co., and other herring curers in that town, we found the curing processes carried out to perfection, and all appliances complete. The house of Bruce & Co. was established about 70 years ago. They took the first prize, a valuable gold medal, for the best cured herrings at the great Fish Exhibition held in Berlin, Germany, in 1880. Accompanied by Mr. Melville, the local fishery officer, we were kindly shown over the whole premises by Mr. Bruce, who had his coopers unhead numerous barrels of packed herrings, at alternate ends, in order to give us the back view of the fish in the one end, and the belly view in the other. The character of this firm and a number of other fish-curing firms, and the excellence of their fish, are so well established and so universally known on the continental markets that they no longer have their herring branded, but sell freely on the reputation attaching to their own name.

One great advantage in Britain of having good sheds is that in calm weather, and when the boats have a long way to come from the fishing grounds, and the delivery of fish takes place late in the day, the gutting girls can at once go to work, gutting and packing all night by gas light, instead of letting the fish remain over until morning, to the great detriment of the quality and flavor of the herring.

It requires, however, great experience and practical knowledge of the whole business to enable a fish curer to dispense with the brand, and the degree of excellence in the art of curing necessary to beget this confidence in the name and reputation of any firm can only be attained under the operation of a law compelling inspection and branding. The history of the rivalry between the Dutch and the Scotch for supremacy in the herring markets of Europe abundantly proves this, as we have seen. In 1784 the Dutch were ahead of the Scotch. By the adoption of a rigid law of inspection the Scotch got ahead of the Dutch. In 1857 the Dutch adopted the system of the Fishery Board of Scotland and its regulations, and by stricter attention to details in curing and packing, under their law of inspection and brand, the Dutch are again, but only in a general way, ahead of the Scotch, because a very large proportion of Scotch-cured herring are as eagerly sought after in the markets of the continent as the very best Dutch-cured herring.

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In common with all important measures of a national character, the brand has, from time to time, been attacked but the result of discussion and experience has been to re-establish the inspection and brand, as related to the herring industry more firmly than ever. We here repeat what in his historical sketch of the herring industry in Scotland Mr. Mitchell says: "The increase of the herring fishery depends very much on the demand for exportation, and this demand requires to be carefully cultivated, not merely by the curers, who may be viewed as the manufacturers of the goods, but by the Government, which, by impartial and just legislation, protects the interests of the fisherman, the consumers at home and the merchants and consumers abroad. That there was an abundance of herring on the Scottish coasts was known for centuries past; but when considerable quantities of them appeared they were of little remunerative value when caught, because the demand was limited to the mere local consumption. Before the specific and legalized size and quality of the manufactured article—the barrel of well-cured herring—could be obtained as goods for commercial purposes, a merchant abroad could not buy herring in Scotland, there having been no legal, distinct, specific form and quality. The curer might say, "My barrels are of every size, and various in quality and price," but the foreigner could not order nor buy such goods, and he therefore bought herrings which were of legalized size and good quality elsewhere; and although he paid a high price, he obtained what he wished in Holland and other countries; and these countries are ready to supply any quantity if Scotland should be unable to do so.

"Before a proper system of legislation was adopted in this country, and even for some time after the system was introduced, the demand from abroad was inconsiderable; but confidence having been given from years of experience, and the trade based on a solid foundation, under legal enactments fixing measure and quality, the business progresses and bids fair every year to extend and increase."

The tangible symbol and final result of all British legislation may be said to centre in the brand—as that is what has given Scotch herring the reputation they have earned in the markets of Europe—the brand being the seal or impress of inspection.

In 1851 an agitation was raised against the brand. Mr. Mitchell publishes a letter addressed by Mr. Alexander Wellman, one of the principal merchants of Stettin, to Mr. Traill, M. P., London, on the subject of the brand. In that letter Mr. Wellman says: "I take the liberty of stating that the official Brand of Scotch, Crown and Full branded herrings obtains the greatest confidence, not only in our own market here in Stettin, but also in the interior of Germany, where the meaning of that brand is understood; and my own firm belief, and also that of other people engaged in this branch of business is, that it would be most injurious to the trade should the brand cease to exist, for Scotch herrings are only sold in small quantities in this market and neighborhood, they are chiefly sent great distances of from 100 to 800 miles, English, into the interior of Germany and Poland, either by orders or offers without the assistance of commission merchants; for the great expense of forwarding them will not permit a commission to a third party. The great distance likewise prevents dealers from inspecting the herrings on the spot here, who therefore make their purchases solely on their trust in the official brand, knowing that the fish must be well selected and properly cured—that the barrels be of legal size, and that they require to be well and tightly made before the brand can be affixed.

"The abolition of the official brand would entail great difficulties in this trade. When a party purchasers Crown and Full brand herrings at present he is bound to receive them, if they bear that brand, independent of the quality; and our courts of law have frequently given their decision in accordance with this statement, upon the ground that the British Fishery Board is a Government establishment, and therefore that reliance can be placed on their impartial inspection and strict superintendence.

"Part of the present business consists of consignments by the curer in Scotland, who receives an advance when the herrings are shipped; and my opinion is, that this advance will cease to be given as soon as the official brand is removed, as our merchants here would then be unable to judge what proceeds they will receive out of

them, when sent to the interior; and consequently the Scotch curer must feel it seriously whenever this brand is taken away. This would injuriously affect the trade, and seriously affect the fisherman.

"In my opinion, it will be very injurious to the trade should the British Government insist upon the trade to pay for the brand, for the cheaper herrings can be made the greater distance they can be exported, and the larger the consumption will be; because herrings are a substitute for meat, and have therefore to stand in competition in price with beef, bacon, &c.

"Other articles in casks, such as oil, butter, &c., can be sold according to sample, or their quality and contents can be stated; but such is not the case with herrings, for it is impossible to describe each fish in each barrel, or their number, and neither how the cure has been effected, nor whether they have been cured immediately after capture.

"How could the Scotch herring trade in Germany be protected if the superintendence of the British Fishery Board ceased to look after this? So long as the Board keeps up its present character and brand there is no fear of a decline in the importation of Scotch herring into Germany."

In the report of his visit round the herring coasts of Scotland in 1856, Mr. Barry, one of the Inspecting Commissioners of the Irish Fisheries, says:—

"I saw quite enough to impress me with the vast importance, the great magnitude, of the herring fishery on the east coast of Scotland.

"It is quite evident that a great deal of excitement and anxiety prevails among persons interested in the trade on the subject of the proposed abolition of the branding system, and consequent reduction of the Fishery Board establishment. The subject being at present under the consideration of a commission appointed by the Government, it would not be becoming in me to venture my opinion upon the expediency of relinquishing altogether the practice of branding, but I should not only fear that the absence of all superintendence would be highly prejudicial to the herring fisheries, but would tend to diminish materially the hopes which I have formed to see the growing germ of an enterprising spirit on the part of our east coast fishermen not checked in its bud. Notwithstanding the high standard of moral conduct which I am willing to recognize in our north British neighbors, I should be very unwilling to advise Irish fishermen to resort to many parts of the coast of Scotland if the present Fishery Board be extinguished."

Commenting on the establishment of the Dutch Fishery Board in 1857, Mr. Mitchell says:—

"The Dutch herring fishery laws have lately been considerably modified; and the advantages of a Fishery Board and inspecting officers having been fully ascertained from the great success of the British system, the Dutch Government has created a Board of Commissioners, with similar powers to those possessed by the Commissioners of the British Herring Fishery.

"And again, the Herring fishery in Holland, once so successful, having gradually declined, partly in consequence of the improved quality of the Scotch-cured herrings supplanting the Dutch herrings in the continental markets, the Government of Holland wished to take active measures to resuscitate or improve the system in that country, and in 1857 adopted, and copied, to a considerable extent, the regulations which have been so successfully followed out by the Fishery Board in Scotland, and which have brought the Scotch herring fishery to be one of unexampled prosperity. For the first time a Herring Fishery Board was appointed this year in Holland, and several important laws and regulations were enacted, and among others *the Crown Brand has been introduced, together with various brands and marks, expressive of the different qualities*, so that everything proves that great efforts will be used to increase a fishery which, at one time brought so much wealth into Holland, and laid the foundation of its great industrious prosperity.

"For the first time also, the Commissioners of the Dutch Fishery Board, nine in number, are required, in imitation also of our Fishery Board, to give an annual report of the fishery.

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"Several rules have been issued by the Dutch authorities relating to salt, which seem very judicious, as well as those relating to the assorting of the herrings, the quality and size of the barrels and the orders to the inspectors, several new ones having been appointed; but everything we see in this report proves that we owe the great increase of the fishery on our coast to the system of management under a well regulated Board, and to the care and attention of the fishery officers, who have become thoroughly instructed and acquainted with their useful, responsible duties, from the great number of years the various laws and rules have been elaborated by the test of experience.

"About the year 1848 several herring curers having been discovered," says Mr. Mitchell, "in attempting to pass off their herrings as entitled to the Crown Brand, which herrings were either inferior in quality or not properly assorted, or the casks not of full size, had their herrings seized by the officers of the Board; or what was also severe punishment on account of the exposure, the purchasers were informed of the error or fraud, and rejected the purchases made. In consequence of this, an attempt was made by the guilty parties to get the Fishery Board and their officers into odium. Some of the English Members of Parliament, ignorant of the impossibility of carrying on the wholesale trade in herring of a marketable quality without a continued surveillance of experienced men, as the fishery officers are, were induced to object to the maintenance of the Fishery Board, and the inspectors or officers; and it was thought necessary in that year to make enquiry 'as to the utility or efficiency of the Fishery Board'. Accordingly, the Right Hon. J. G. S. Lefevre was sent to Scotland to enquire and report; and although he came to Scotland in no way prepossessed in favor of the system, he seems to have been fully convinced of the great advantages of the system carried on; and his report fully proves that he, after the most careful enquiry and examination, was convinced that the system was useful, necessary, and tended to promote the success of the fishery. We beg to quote from this report such passages as have reference to the brand only. Mr. Lefevre says: "Of the various duties devolving upon the officers of the Fishery Board it appeared to me that those which relate to the branding of herrings first demanded my attention, inasmuch as if the continuance of that system were deemed expedient the establishment by which it is conducted must of necessity continue, subject, of course, to any possible reductions.

"At, or previous to the commencement of my enquiries, various representations reached me, both from individuals and bodies of fish curers, which led me to believe that the continuance of the system of branding was deemed to be objectionable by a considerable portion even of those who are in the habit of availing themselves of it; and some anxiety was expressed by the more distant fish curers that I should personally visit Wick, with a view to inform myself as to the opinions entertained on this subject.

"The lateness of the season, and my other public engagements, prevented me from acceding to this suggestion; but in order to give all the fish curers on the east coast of Scotland the opportunity of bringing their views before me, I addressed to them a circular letter, containing certain queries framed for the purpose of eliciting their opinions.

"From the answers to these queries, and from the oral replies of a considerable number of fish curers and fish merchants whom I examined when in Edinburgh, I believe myself to have procured a body of information with respect to the effects of the branding system sufficient to justify me in the statement and suggestions I am about to submit to their Lordships on that subject.

"The representations to which I have alluded as having been made against the continuance of the branding system adverted to the general objections to which such systems are liable. In reference to these objections I may observe that the practice of stamping or branding articles of commerce by public officers, with a view to authenticate their genuineness or good quality, which existed in this country in respect of various kinds of goods, has, by degrees, been almost wholly discontinued.

"It was found that although it might secure to the purchaser that the article should not fall below a given standard, it tended to prevent its rising above that standard; that it discouraged the improvements of private enterprise, inasmuch as it promoted a uniform limit of price, which it was very difficult to pass by any difference in quality.

"These and other similar objections have been stated in various forms by such of the fish curers as have expressed themselves desirous that the system of branding herrings should be discontinued. These parties concur in the representation that it places upon the same level the careful and industrious curer and the less careful and less industrious, inasmuch as the price of branded herrings at the same time and place is uniform, whoever may be the curer, and whatever may be the pains and care he bestows on the cure; and this important point is admitted by many of those who are favorable to the branding system.

"They further state that the dealers who purchase at the fishery stations make their bargains, in the first instance, with those who cure their herring, not under cover, but in the open air, which is not so good a process, and who sell them at a cheap rate, and thus depress the price of the better article.

"They complain that, whereas, in other kinds of business, industry, skill and honesty have their reward in increased custom and better prices, this is not the case with respect to the exportation trade in cured herring, owing to the levelling effect of the official brand.

"It is pointed out that, although the brand is by law optional, and no one is compelled to obtain it, yet so long as a considerable number of the trade use it, it cannot be safely dispensed with by the remainder; and that the delay and trouble necessarily occasioned by the conditions requisite to be fulfilled produce some expense and inconvenience, and sometimes the loss of markets. They complain that the detention of the herrings during the number of days required before they can be lawfully branded leads to a large simultaneous export, which gluts the foreign market. Some of the witnesses, moreover, have stated that the export trade to the continent of Europe is over-stimulated by the facilities to which I shall presently more particularly allude, and that exporters pay too little regard to the state of the demand in the continental markets, but export at all hazards; and as an illustration of this practice, they advert to the enhanced price of green—that is, uncured fish; and they assert that the curers are at the mercy of the fishermen. [NOTE.—This is reversed now (1889), as all fish being sold by auction, the fishermen are at the mercy of the curers, and in Yarmouth the fishermen complained of this]. They refer to the increase of the red herring trade, and the improvements in that branch of cure, to which the branding regulations do not extend, and which is conducted on the ordinary principles of competition, without the artificial aid of the Government officer, as a fair illustration of the result of placing the white herring trade on the same footing."

(NOTE.—We beg to refer to the chapter in this report on "Red Herring," where it will be seen that the absence of inspection and the branding system has been ruinous to the red herring industry, and paved the way for all kinds of dishonesty in putting up and preparing red herring).

"On the other hand, I feel bound to state that a very large majority of curers, measured both in number and in amount of herring branded by them, are decidedly favorable to the continuance of the brand, as compared with those who have expressed unfavorable opinions. Of those whom I orally examined, Messrs. Methuen, Simpson, Robertson and others, brand amongst them upwards of 50,000 barrels of herrings out of the total brand of 148,000; and amongst the replies from the fish curers to whom my printed queries were sent, those who urged the continuance of the brand (not including the parties orally examined) represented more than between 40,000 and 50,000 barrels.

"The facts and considerations adduced in the evidence favorable to the continuation of the brand appear to me to support the following propositions:—

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"That of the branded herrings, by far the greater portion go to Prussia and the countries adjacent to the south of the Baltic.

"That (unless in the early part of the season) few herrings are sent to those countries except under the sanction of the brand.

"That a high minimum of quality and cure is secured under the system of branding, not only by the refusal of the brand when the herrings are not duly prepared and cured, but because during the whole process of preparing and curing (a process so rapid in its operation, and carried on by such large bodies of persons, as to render it very difficult for each separate curer to watch over those whom he employs), the fishery officer circulates among those employed, examines from time to time the progress of their operations, points out defects in the cure or selection, and stimulates the negligent, by warning them of the possible refusal of the brand. This service performed by the fishery officer many of the fish curers notice as being particularly useful.

"That the brand has the full confidence of the merchants and consumers in those countries is a fact testified, not only by the replies and evidence of the great majority of the fish curers on the east coast and of the fish merchants whom I examined, but also by various representations from continental merchants with whom I have corresponded.

"That branded herrings are accepted with little examination, and pass from merchant to merchant on the continent, and without the necessity of opening the barrel, except in comparatively few instances.

"That the brand prevents disputes as to quantity, quality and cure, and especially those disputes which originate in a falling market, from a desire on the part of the purchaser to throw them back on the seller.

"That the currency (if such an expression be allowed) of the branded barrels facilitates dealings in them, and among those facilities advances on bills of lading, in which the articles being described as Crown, Full branded herrings, are known to be of a definite quality and readily saleable.

"That the brand being an authoritative declaration of the quantity, quality, selection and cure, herrings can be and are ordered by foreign merchants more freely than if such an authentication did not exist, and they can be and are purchased on the spot at the fishery station, without any previous knowledge of or relation with the fish curer.

"That the discontinuance of the branding system might, at all events, temporarily alter the course of the export trade; that some time might elapse before confidence in the individual curers would take the place of the brand.

"That at first, there might be distrust sufficient to occasion some diminution of the demand, which might be still further diminished if (which is by no means improbable) any falling off in the cure by the inferior class of curers were to damage the reputation of British herrings in the continental market.

"That these results would be aggravated if an official Government brand for Norwegian herrings were established—a possibility which is adverted to by one of the witnesses.

"That the existing state of the continent of Europe (1856) and the diminution of the demand for white herrings in Ireland, occasioned by the failure in the potato crop, render the present not a favorable juncture for making a change in the established system of the herring trade."

"After giving my best attention to the facts and considerations which I have above set forth on both sides of this question, I deem it my duty to state that if the question of continuing the brand related only to the home trade in white herring, these appear to me to be not adequate grounds for supporting it; but, as respects the foreign trade, which is sufficiently large to be an object of the highest importance to Scotland, the branding system forms so essential a part of its arrangements, that its abandonment might cause such derangement and contraction of that trade, and consequent loss and inconvenience to those engaged in it, and to the large bodies of the working classes employed, not only in fishing, but in the various operations

of curing for the continental market, that I feel compelled, notwithstanding the objection in principle to which it is liable, to recommend that it should still be maintained, and, as a necessary consequence, that the establishment of the east coast fishery officers should be continued.

"I am disposed to think, however, that it may be worthy of consideration whether it may not be advisable to charge a small fee or duty upon the branding of each barrel. This would throw a portion of the expense of the establishment upon those who immediately benefit by it, and would thus lessen what is, in effect, a bounty on the export herring trade, at the expense of the other classes of the community. It would likewise encourage the enterprising curer to rely on his own brand, as the saving of this fee might counteract the disadvantage of his contending against the Government brand."

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The contingency apprehended by Mr. Lefevre, in the seventh last foregoing paragraph is just what has happened to damage to some extent the character, and to injure, to some extent, the demand for Scotch cured herrings in Stettin, the great continental market, and to give the Norwegians and the Dutch an ascendancy, the former to a very considerable extent, in the German markets—an ascendancy which otherwise they could not have obtained. It said that the quality of the Norwegian herrings, in the first instance, as taken from the sea, is much inferior on the whole to the quality of the Scotch herring, although at times, and especially in 1889, the quality of a large portion of the catch taken on the north-east coast of Scotland was very inferior, consisting largely of "Spents." But the Norwegians, like the Dutch, take very great care and pains in curing their herring and in packing them, and they are thoroughly alive to the necessity of doing so, in order to secure a share, a name and position in the markets of the continent.

In the course of our inquiries we ascertained that the Governments of the maritime countries of Europe, having herrings upon their coasts, are all deeply sensible of the great importance of the herring industry; but from all we could learn, it would appear that the Norwegian Government takes the most active interest in the development and promotion of their fishery industry, and the promotion of their herring trade—if we measure that interest by the wise and paternal legislation of that Government and the Parliament of that country, and the liberal and judicious expenditure of money made on behalf of the fishing population, not only by direct encouragement to the fishermen, but also by the improvement and construction of local harbors and landing piers, for the benefit of those engaged in the Norwegian fisheries.

Next to the Norwegian Government, probably the French Government manifests the greatest interest in the development, increase and protection of the herring fishing industry in that country. Much useful legislation has been enacted, and a heavy protective duty imposed by the French for the promotion of their herring trade.

The Dutch Government also appear to be indefatigable in devising and adopting legal measures for the promotion of the great herring industry in that country in every way.

In Britain there has been much legislation for the regulation, protection and promotion of the herring industry since A.D. 1240, and the establishment of the British and Scottish Fishery Boards have been of the utmost benefit to the herring fishing industry of Britain. Complaints, however, are made as to the want of local harbors on the north and north-east coasts of Scotland, and the imposition of the branding fee is felt by many to be a hardship. While large sums of money are expended on harbors in the south, and for the advancement of the general prosperity in other directions, it is felt, generally, that the fishing industry of Scotland, being a very important item of the national trade, has not received from the Legislature that degree of consideration, encouragement and aid to which it is entitled.

Between all these Governments there is a race, and a keen rivalry for the markets of interior Europe, Germany especially, where the consumption of herrings

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is very great, and it would naturally be supposed that a knowledge of this fact, which must be well known to every fish curer and fish merchant in Scotland, would have put them on their guard and prevented the exportation, by any of them, of herring to Stettin, of an inferior quality, thereby jeopardizing an important trade, and giving other nations a footing in that market which otherwise they could not have gained. Yet this was what was done; and the exportation to Stettin some years ago of unbranded herrings and of branded herrings, cured in the open air and exposed to the elements for weeks subsequent to branding, has done much to injure the herring trade and temporarily, at least, to impair the implicit confidence heretofore placed in the Crown Brand.

In 1888, the Fishery Board of Scotland, through the Home Office, sent out circulars to all the British Consuls on the continent of Europe and parts of North Africa, soliciting information as to the demand or probable demand, for Scotch-cured herring in their respective consulates. In his reply, the Acting Consul at Stettin gave the following figures, showing the importations at Stettin of herrings from all countries in the year 1887. These are as follows:—

Scotch herring.....	Barrels.
Norwegian herring.....	310,191
Dutch do	186,652
Swedish do	5,876
Bornholm, Pomeranian, herrings.....	1,295
	598
In all	504,612

As elsewhere stated, the sales of Scotch-cured herring in Stettin in 1885 amounted to 402,982 barrels, and in 1886 to 371,954 barrels, showing a very considerable falling off. In relation to this very serious decrease we cannot do better than quote the following editorial article from the *Glasgow Herald* of 1st October, 1889, the leading paper of that city:—

"THE SCOTTISH HERRING TRADE WITH STETTIN.

"We regret to find, from a consular report, that the demand for Scottish herrings in Stettin, which forms an important feature of our trade in these fish, continues to decline. According to the tabular statement given, the number of barrels exported from Scottish ports in 1888 was only 292,105, as against 310,191 in 1887, and 371,954 in 1886; whilst in 1885 the figure was still higher, 402,982 barrels having been forwarded to Stettin. It appears that Swedish herrings are beginning to find more favor in some of the German markets than Scotch-cured fish, which are decidedly less in favor than they were a few years ago. It is complained that 'Scotch production' has remained stationary, or indeed retrograded a little, a result, perhaps, of the ease with which the necessary brand can be obtained; whilst Norwegian, and latterly Swedish curers as well, have been making great efforts to study the demand, and prepare for it, by curing their fish in the mode desired. It is pointed out in the present report that the early caught Scotch herring are packed before they have been perfectly cured; the fish not having been sufficiently *pined* (or shrunk) the barrels are not properly filled. Another fault which is referred to is, that the selection of the fish might be greatly improved, and that the 'brand' in the case of branded foods, ought to be an undoubted guarantee for the contents. An equal standard in the size of the herring barrels, it is recommended, should be maintained, in order that retail purchasers may be aware of the average contents.

"Swedish curers are improving upon the Scottish system of curing, by carefully avoiding all its defects. The packing is equal to the average Scotch filling, and the selection of the fish is carefully attended to, with this result, that the Swedish and in many cases the Norwegian herrings, are supplanting the Scotch cure in the German markets; and should the supply of fish hold good, the Swedish herrings, unless Scottish curers make a united effort to amend the defects in their cure, are likely to

obtain and maintain a still better position in the markets than has yet fallen to their share."

This article goes to confirm the opinions we formed on the subject, namely, that the present unfavorable position of Scotch-cured herring in Stettin is due to the negligence of some Scotch curers in exporting herring before they have had time to *pine* or shrink, to *season* and mature in the barrels, and in the exposure of herrings to the sun, both before being cured and after inspection. It is quite possible, and we think very probable, that what may be considered an injury to the herring by exposure to the sun before curing may be such an injury as may not develop into visible or perceptible deterioration within the ten days, the time allowed the fish to "*season*" before the brand is affixed, and yet that the results of such injury, aggravated by subsequent exposure to the sun in the barrels, may develop into serious deterioration before the fish reach Stettin. A celebrated physician of Edinburgh holds that a bottle of olive oil may be completely injured and its medicinal qualities completely destroyed by one day's exposure to the sun in a shop window. So there is nothing here at all inimical to the value and integrity of the brand.

The able and well worded report of Mr. Lefevre did not finally settle the battle of the brand; for it is stated, as recorded by Mr. Mitchell, that in the year 1856, in consequence of objections by some members of the English House of Commons to the expenditure incurred in supporting the Fishery Board, and the system of superintendence and branding, and notwithstanding the elaborate and carefully prepared report of the Right Hon. J. G. S. Lefevre, which went fully into the question, and proved the advantage and propriety of continuing the system, a second Commission of Inquiry, consisting of two English gentlemen, Bonamy Price and Frederick St. John, and an Irish gentleman, Capt. Sullivan, R.N., was appointed, whose opinions did not agree, and the members of the Commission, therefore, gave in separate reports, the majority in number having reported in favor of the continuance of the brand and of the system. To exhibit the opinions of the different members, we give the following extracts from the report of Messrs. Price and St. John, a remarkably well written and elaborate report, going over all the arguments for and against the inspection by the fishery officers, and the system of branding, which is too extensive to give at length; but the most striking remarks furnished by them are the following:—

"The first argument pleaded by the defenders of the brand states, we conceive, the real issue to be tried. We have to deal with an established and flourishing trade. It employs an immense capital, draws out of the sea a large proportion of the revenue of Scotland, and is the chief means of subsistence of a considerable part of the population of that kingdom. Still more, it exhibits those signs of healthy life for which the invigorating impulses of competition are sought and valued. It is progressive. It grapples with formidable rivals and conquers them. Since 1848 the quantity of herrings imported from Great Britain into the ports of Stettin, Dantzic, Hamburg, and Königsberg has increased from 100,297 to 318,263 barrels in 1855, whilst the Dutch imports into the same places have declined from 5,019 to 1,300 barrels, and the Norwegian from 194,862 to 122,423 barrels.

"Is it politic to disturb such an organization? Can an adequate motive be alleged strong enough to call for and justify interference? Is it desirable to destroy, in exchange for another, a machinery which is certainly the concomitant, but which is also represented by a majority of those who carry on the trade to be an efficient instrument of its prosperity? Such we consider to be the practical question to which we are required to give an answer.

"Now, it is essential to observe that the services performed by the branding are necessary for the herring trade and must, under any system, be accomplished by some machinery or other. Every part of the work done by the fishery officers is not only useful, but indispensable. Gutters and picklers must be watched, for a few broken or ill-assorted fish would greatly impair the mercantile value of a barrel of herrings. *There must be inspection before purchase.* That the fishery officers discharge their duties with admirable judgment is cheerfully, and even gratefully,

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"It cannot be said that the abolition of the brand is demanded by public opinion in Scotland. It encounters the active hostility of some portion of the press, but the great majority of the traders are loud in its favor. On the west coast, which supplies the home markets, and does not use the brand, there is no marked demand for its abolition. We are at a loss for a principle on which we could urge the Government to take away from a great trade a convenience which we have shown to be harmless, which will cost the nation nothing, and whose value will be attested by the surest of proofs—the free demand of the traders to purchase (and use) it.

"On all these grounds, we have come to the opinion that the abolition of the brand is inexpedient; and we beg to recommend to my Lords its continuance, on the condition that it shall be self-supporting."

Capt. Sullivan concludes his minority report as follows:—

"Having given the whole subject, which was entirely new to me, my most serious consideration, I have no hesitation in advising strongly, that instead of attempting to continue the Government interference in this objectionable manner, it should be entirely withdrawn, after sufficient notice being given, and the trade left to depend upon its own merits alone. I cannot conclude the subject without bearing my testimony to the merits of the officers of the Fishery Board as a body. It is highly creditable to them, that out of the large number of witnesses examined privately, many of course opposed to the officers, and some few annoyed because at one time or other their fish had been rejected for the brand, on what they considered too slight grounds, not one failed to do justice to the strictly honorable conduct of every officer they had met with."

Further, on the subject of the brand, Mr. Mitchell refers to the matter, as under:—

"Were any additional evidence requisite to prove the great advantages of the system of inspection and superintendence by the fishery officers, we would suggest the perusal of a very able pamphlet written at this time (1856) by a gentleman of high standing, and of great practical experience, who, for many years, was largely engaged in exporting herrings to the continent of Europe—Walter Biggar, Esq.—and who is now retired from business, and has no connection with the Board or the fishery.

In this pamphlet Mr. Biggar says:—

"I maintain that it is next to impossible for a man to buy a cargo of herrings, entirely upon his own skill and judgment, unless he has been present at the curing and packing of the fish from the commencement. There are rogues in all trades; and it was only the other day that a butcher was fined £10, by the sitting magistrate in Edinburgh, for offering unwholesome meat for sale. If a man will attempt this on a stall in open market, how much easier to escape detection when the unwholesome article is packed in the middle of a cask, and covered with salt and pickle.

"Though I was upwards of thirty years engaged in the herring trade, and understand it as well as most men, I confess myself unable to buy a cargo of herrings, with safety to myself, if the seller be a rogue, and determined to cheat me. I should feel quite as incapable to do so, on my own judgment, as I should be to buy a silverspoon on my own judgment, which had not first passed through the assay office."

It is worthy of note and remarkably coincident, that in 1849 the appointment of Right Hon. Mr. Lefevre to make certain inquiries respecting the Fishery Board, and the Crown Brand, with a view to the abolition of both, took place after certain fish-curers had been detected in attempting to pass inferior herrings as entitled to the Crown brand, and had their herrings seized by the fishery officers in consequence.

That the appointment of the Commission consisting of Messrs. Price and St. John, and Captain Sullivan, in 1856, for the same purpose, took place after some fish-curers had been annoyed, because at one time or other their herring had been rejected for the brand; and

That while we were in Scotland in 1889, some of the fishery officers on the east coast of Scotland seized a quantity of herring, in barrels made of pine staves, because the staves were abnormally thick, although dressed off at the ends to represent the lawful thickness, whereby the capacity of the barrel was diminished so materially as to diminish the quantity of fish in the barrel to the purchaser. Following closely on this seizure, an agitation commenced in several of the fishing stations on the east coast, demanding the abolition of the brand. A meeting had been held in Wick before we left, for the purpose of discussing the subject. Referring to that meeting, and the agitation in general, the "*John O. Groat Journal*" of Wick, a paper thoroughly conversant with the whole fishery trade and its requirements, says:—

"Well, suppose the brand to be abolished. How is the curing business then to be made profitable? This is a question which cannot be well answered. As to the fishery officers, it is not to be believed, from anything said or written, that many barrels which were branded along the east coast should not have been branded at all, so, reflecting, as it were, on the judgment of the fishery officers. Any one who may attempt to argue for the abolition of the Board, from this point will utterly fail, and it would be well that no one should attempt it. We are glad to see that in Scotland this is not being done. The fact is, the quality of the herrings of this year has disappointed many, and perhaps none more so than those who made c. i. f.—costs, insurance and freight—purchases. Inferior quality and a falling market mean, in many cases, repudiation, from repudiation arise complaints.

"In too many instances, we regret to say, blame has been cast upon the fishery officers, for which they have not in the very slightest degree been responsible."

The "*John O'Groat Journal*" newspaper, of Wick, above quoted, of December 24th, 1889, contains the following, which very probably settles the question of the brand, for some time to come:—

"FISHERY BOARD AND THE HERRING BRAND."

"A meeting of the fish curing trade was held in the Town Hall, Fraserburg, on Wednesday. Chief Magistrate Park presided. The business was to consider the question of abolishing or retaining the crown brand for cured herrings exported to foreign countries. Representatives of the larger firms appear to be in favor of abolishing the brand, while the representatives of the smaller firms were almost unanimous for retaining it, with certain modifications, suggested in recommendations, read by Mr. J. S. Davidson, from a previous meeting of exporters, who had sent to the continent this season over 300,000 barrels. The recommendations, which were agreed to by a large majority, were to the effect that, in order to give the continental merchants confidence in their purchases, no full herrings under 11 inches in length should receive the brand; "Medium Fills and "Spent" not to be branded under 10 inches and 10½ inches respectively; smaller fish, in their several classes, if branded at all, to be branded as mixed, thus dispensing with what hitherto was known as the "Mattie" brand. A committee was appointed to communicate the views of the meeting to the Fishery Board."

The Fishery Board of Scotland had previously sent a delegation of their officers to Stettin, to ascertain all particulars in relation to the rejection of some of the brands, and no doubt the modifications proposed will meet the difficulty.

One thing clearly established by the foregoing testimonies is, that the herring trade, as at present constituted in Britain and the other European nations engaged in it, cannot be successfully conducted independent of the supervision and inspection of some organization invested with authority in the premises, and the use of the Crown brand—and that it is imperatively necessary that every possible care be taken to protect the fish from the sun or its influence before curing, so as to prevent the slightest injury to the herring, or taint of incipient deterioration, which may not become apparent within the legal ten days, but is sure, nevertheless, to develop in its own time—even subsequent to the inspection and branding of the officer—and the necessity of carrying on all the processes of curing under cover.

BEAM TRAWLING.

Beam trawling is practiced to a considerable extent around the British coasts, greatly to the annoyance and discouragement, and we believe the detriment of the established coast fishermen, who look upon the beam trawler as a sort of marine marauder, taking all he can, by unfair means and machinery, out of the sea, wantonly destroying what he cannot use, and inflicting serious injury upon the herring fisheries by disturbing the herring, scaring the shoals of herrings from the fishing grounds—and destroying the spawn.

On the subject of beam trawling, as on every other subject relating to the herring fisheries, much discussion has taken place, and the weight of evidence, as well as the preponderance of popular opinion, so far as we could learn, are against the trawlers. One thing is very certain, and that is, that they have to a great extent depleted the flat fish fisheries, because one does not see, either in the markets or on the tables, such sole, plaice or flounders as were to be had in Britain twelve years ago. The most of this kind of fish we saw were poor, small, immature fish, mostly unfit for food. The beam trawler scoops up everything that comes in his way—immature fish, fry spawn and shell fish—and it is said that the destruction of these is very great and, ruinous to the local fisheries—quite unnecessary, and should be either entirely prohibited or else regulated by stringent regulations rigidly enforced.

From Mr. Mitchell's excellent book on the herring, we learn that the subject of beam trawling has been thoroughly discussed since 1852, and although we are not aware that this mode of fishing has made much progress in the Maritime Provinces of Canada, yet we deem it our duty, in connection with the objects of our mission, to refer to this matter in a general way and in connection with the subject of spawn. On this subject as on nearly every other relating to the herring fishery, great difference of opinion seems at one time to have prevailed, but in the light of an intelligent experience and the exercise of some degree of common sense, it is quite possible to arrive at correct conclusions on this, as on all other controverted fishery subjects.

Beam trawling on some parts of the coast of Ireland gave rise to serious disturbances, on the part of the drift-net fishermen, in certain portions of that country.

In some instances Commissioners appointed by the Government to investigate the causes leading to such disturbances reported in favor of the beam trawlers, while others reported against the system. In consequence of certain action on the part of Lord Vernon in 1817, a Parliamentary enquiry by a Select Committee on the South Devon fisheries was ordered, at the instance of the great body of the fishermen on that coast, by whom a document was signed to the following effect:—

“BRIGHAM QUAY, TORBAY, 11th June, 1817.

“The undersigned, being persons concerned in the fisheries between Start and Exmouth Bay, do humbly declare our opinion that it will materially promote and benefit the said fisheries if trawls and drag nets are prohibited being used in Torbay from 1st May to 1st November, and in Start Bay from 1st May to 1st October.”

The recommendation of this Parliamentary Committee, after hearing evidence, was:—

“That it will conduce to the benefit both of the public and of the fishermen themselves if Start Bay, Torbay and Exmouth Bay, on the southern coast of Devonshire, are kept free from trawl and shore drag-nets during the spawning season; and they are the more induced to recommend some regulations to that effect, as it has been clearly shown that it will not throw any fishermen out of employment during these months, and will be the means of increasing the quantity of cheap and nutritious food, on which all the lower ranks of society in that part of the country chiefly subsist.

The Convention Act, that is, the Act regulating the fishery arrangements between France and Britain in 1843, was the first measure of legislation restraining trawling on the English and Scotch coasts generally. But after nine years' experience of the Act, the guardians of the British herring fisheries have, in a special

statute, 14 and 15 Victoria, chap. 26, sec. 6, repeated the restriction upon trawling in the vicinity of herring fisheries, when the regular herring fishing has commenced.

Mr. Mitchell quotes from the report of a Parliamentary Committee of the British House of Commons in 1853, the following:—

"The last measure of legislation, 14 and 15 Victoria, chap. 26, sec. 6, extending to the whole coasts of Scotland and England, has been enacted at the instance of the Commissioners of British fisheries, having a large and well trained staff of officers, watching closely the interests of the most important and most prosperous fishing community in the Empire, and that it may be considered an unqualified affirmation of a similar regulation in the French Convention Act, but in more stringent terms and after nine years' experience of its effects."

Further, on this subject, Mr. Mitchell publishes a letter from Mr. Thomas Anderson, an extensive fish merchant of Glasgow, on the injury to spawn and fry caused by the beam trawlers. Mr. Anderson says:—

"Having been extensively engaged in the fish trade in Scotland for the last fifteen years, I have observed, with very much regret, the great injury done to the white herring fishings by the use of trawl nets. Nearly about ten years ago the trawl was introduced into the Firth of Forth, and in accordance with the increase of the use of the trawl net the gradual decrease in the take of white herrings has been the result. Also, on the west coast of Scotland (particularly the Ayrshire coast) it is a well known fact that ever since the introduction of the trawl net there has also been a gradual decrease in the take of herrings, and I am fully convinced in my opinion that the use of the trawl net must destroy either the spawn of the fish or the young fry.

"I may also mention that from one station I had from 700 to 800 young turbot in one day lately, and scarcely a marketable fish among the whole lot, the most of them not weighing more than from 1 to 1½ lbs. These were some of the produce of the trawls; and my objection principally applies to inlets, bays, firths, &c., or anywhere near the shore. My object being to get as many marketable fish as possible, I am, of course, in no way interested in the prevention of any particular mode of taking fish which shall not be injurious to the fisheries in general.

"I speak from great experience, being the owner of large stations in the Island of Lewis, in the Firth of Forth and the east coast of Scotland, my principal headquarters being in Glasgow, and employing in one way or other 800 to 900 hands."

"In 1858 the Fishery Commissioners of Ireland, seeing the advantage of restricting river trawling, ordered that the following localities on the Irish coast be subjected to the fence law, pointing out to other Governments the propriety of following such a wise example. This order prohibited trawling inside of certain lines in Dublin Bay, east coast Dundrum Bay, Galway Bay, Dingle Bay, Bantry Bay, Waterford Harbor and the Wexford coast.

"They also ordered that in regard to Galway Bay and Wexford coast, trawling be prohibited in all places where there are boats engaged in herring or mackerel drift-net fishing, and that trawl boats shall keep at a distance of at least three miles from all boats engaged in herring or mackerel fishing, and that whenever herring or mackerel boats shall commence drift-net fishing in any place on or off the coast of Wexford, the trawl boats shall depart therefrom.

"By the British Act, passed August 13, 1860, the Scottish Fishery Commissioners were authorized to prohibit, on the coasts of Scotland, the use of any trawl, drag, or beam net, injurious to the spawn of herring or to the herring fisheries, under a penalty of not less than £5, and not exceeding £20 sterling."

In concluding his interesting references to beam trawling, and in reference to the investigation had in 1860, as to the alleged injuries inflicted on the herring fishery in Galway Bay by trawlers, Mr. Mitchell very correctly says:—

"We have no doubt, from careful observation, not only at Galway, but also in other quarters, that beam trawling is injurious to herring shoals, and may diminish

or utterly destroy the annual visits of the herrings, as they are so easily scared away. For instance, as soon as a herring shoal spawns, thither the various kinds of flat fish assemble, and the beam trawls following these tear up and annihilate the spawn in large quantities, and the herring may cease to return."

In their report to the British Government in 1878, the Commission, of which the late Mr. Frank Buckland, the celebrated naturalist, was a prominent member, arrived at certain conclusions which are referred to elsewhere in this report. We here refer to the following heads:—

"No. 3.—Nothing that man has done, and nothing that man can do, has diminished, or is likely to diminish, the general stock of herrings in the sea."

"No. 4.—Either from the operations of man however, or from some other cause, herrings have been deterred from entering the firths and sea lochs, of Scotland, the in the same numbers as formerly."

"No. 5.—The fishing for herring has, in consequence, been gradually prosecuted farther and farther from the land, especially on the east coast."

Mr. Buckland and the other members of the Commission arrived at the conclusion that beam trawling did not cause any destruction of herring spawn around the British coasts, and that therefore there existed no necessity for prohibiting or regulating the beam trawling fishery—in this respect differing from all the authorities we have seen or heard of on the subject. But it appears that Mr. Buckland, after the writing of that report, and before his death, had changed his mind in this respect. We met a Yorkshire gentleman in Edinburgh who is a member of one of the local Boards, under the Board of Trade for the protection of salmon, and the regulation of salmon fishing, who informed us that Mr. Buckland was an intimate friend of his; that before his death he had changed his mind on the subject of beam trawling, and became fully convinced that it was most injurious and destructive to the spawn of the herring, and that it should be prohibited on all herring spawning grounds. This gentleman also informed us that the local Salmon Fishery Board, of which he was a member, had devoted much attention to this subject, and that they were so fully convinced of the destruction to herring spawn caused by the trawlers on their section of the coast of Yorkshire that they had decided to apply this fall to the Board of Trade for enlarged powers under the Fisheries Acts of Great Britain, authorizing and empowering them to interfere, for the protection of herring spawn, with the operations of trawlers, and to regulate and prohibit their movements within territorial waters.

And so convinced were the present Government and Parliament of Great Britain of the destruction caused by trawlers to herring spawn in certain forths of Scotland, heretofore exempted from the protection extended to many other spawning grounds on the British coasts, that on the urgent representations of the fishermen and others interested in the success of the herring fisheries in those localities, an act was passed by the Parliament of Britain in August last (1889) extending the operations of previous Acts, regulating and prohibiting beam trawling in certain others of the great firths of Scotland. And we know from press reports that the passing of this Act gave very great satisfaction to the fishermen and others of those localities which had been suffering from the operations of the beam trawlers. So that the latest utterance of the Parliament of Great Britain on the subject of beam trawling, its regulation and prohibition in certain districts where the herring are known to spawn, is to the effect that the system, uncontrolled, is injurious to the herring fisheries, and destructive of the herring spawn.

While it is desirable that the fishermen should be hampered as little as possible by legal enactments, it is wise and proper, and necessary, that the Legislature should regulate and control such a vast and important industry. Man cannot change the arrangements of nature, or minimize the great ravages committed on the herring by the myriads of fishes and birds who prey upon it! But man can avoid and prevent all needless waste, and all reckless, wanton destruction of fish and spawn.

In Great Britain, in addition to the quantities of immature flat fish taken by the trawlers immense quantities of immature haddock, whiting and other such fish less than the size of a small herring are taken, as can be seen everywhere in the markets, and on the tables of the people. It is also very common for large quantities of immature fish taken by the trawlers to be carted away by the farmers and used as manure, a reprehensible practice, to which we shall refer further on. On this continent, in the depletion of the fisheries of our neighbors we have example and proof of what a reckless system of fishing can accomplish. While it may to some extent be true that man, by the use of fair and reasonable appliances, and careful modes of fishing, cannot diminish the general stock of herrings in the sea, yet, as in the case of our neighbors we see what man can do, by the adoption of needlessly destructive measures; and Mr. Buckland and his fellow commissioners in their conclusion No. 4, admit that on the east coast of Scotland the herring have been driven further off the land—no doubt by a reckless mode of fishing. How much better would it be for the fisherman, the trader and the consumer, to allow all kinds of fish to attain to some degree of size and maturity, so that they may be "good for food," rather than to be taken, at such stages of their existence, as to be fit only for manure. We should, as a people, guard against all tendencies leading to such results in the case of our fisheries. The meshes of all trawl nets, or other nets used for surrounding fish should be large enough to allow the escape of all immature fish—and time and space should be afforded for such escape. These immature fish are really not fit for food, and the Governments and Legislatures of the fishing nations should put a stop to such widespread destruction.

SPAWN.

Intimately connected with the subject of beam-trawling as we have seen, is the question of spawn. This question too, has been much discussed in Britain, and has not yet been definitely settled. One party to the controversy contends that the herring spawns on sandy, stony or gravelly bottom in shallow water. Another party contends that it spawns in the water loosely altogether off from the bottom and that the spawn can be seen immediately afterwards floating in the water in the sea giving it a whitish appearance by day, and a brilliant phosphorescence by night. Mr. Mitchell says.—

"The male herring has two milts of an oblong shape and whitish color; and the female has two roes, which are darker than the milts; The number of eggs contained in a female herring was found by Dr. Harmer to be 36,960. Herrings have been sometimes found with the roe of the previous season in a bag, or covered with a skin, in addition to the roe of the following season. At Thurso, an intelligent fish curer told me that in the inside of a herring he found the old roe of the previous season, the eggs of full size, covered over with two layers of fat, and a thick dark film adhering closely to the back, and outside of this the two other parts fully formed, about 3 inches in length.

"After remaining on the coast for a number of weeks, the herring deposits its spawn on hard, clayey or rocky ground, or gravel before leaving the bays or estuaries where it resorts. The female first ejects the roe, which is afterwards impregnated by the ejection of the milt of the male. Sauer describes the mode of impregnation from actual observation, and states that in the inner harbor of St. Peter and St. Paul, Kamschatka, the herring were extremely numerous; and he observed that on the 7th June, the herrings made circles of about 6 feet in diameter, and in the middle of this circle, at the bottom another, no doubt the female, was fixed. When the tide went out he saw the aquatic plants and the stones covered with the spawn, which was devoured by dogs, gulls and crows.

"We have fully ascertained that the shoals generally fix in one locality for deposition, and that immediately after spawning the herrings proceed to sea. The nets of the fishermen are then often covered with the detached, unfecundated eggs of the female; but those eggs found loose in the nets are driven out by the pressure of the twine. The really oviparous fecundated spawn, of which we have specimens, is

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of a different description, and wonderfully manifests the sublime behests of creation. The proper incubation, as before mentioned, is as follows:—The female remains quiescent at the bottom; the whole of the roe is at once deposited; the milt thoroughly ripened in the male herring, has become changed from a solid mass to a liquid of the colour and consistency of cream; the roe although placed in the briny flood, becomes a firm, united mass somewhat larger than, but similar in shape to the roe in a full herring. This lifeless mass or egg-bed has the power of adhesion—it grasps firmly the stones, the rocks, the sea-weed, &c., so much so, that we have found it difficult to remove or separate it, until the mass was dried or dead; the young being thus protected from the effects of storms and currents, to a certain extent from being devoured by fishes, and firmly fixed, probably in a suitable feeding ground. Thereafter the eyes are first observable—at least, a small black spot is first seen in the egg. Then the head appears and in fourteen days or perhaps three weeks the young are seen in great abundance near the shore, of a very small size; in six or seven weeks more they are observed to be about 3 inches in length and move about in large shoals in winter and spring on the various coasts, and in the rivers and bays generally resorted to by the herring shoals, and it is likely that they attain to full size and maturity in about eighteen months. Lacepede says, that in North America the spawn of the herring have been carried by the inhabitants and deposited at the mouth of a river which had never been frequented by that fish, and to which place the individual fish from these spawn acquired a habitude, and returned each year bringing with them probably a great many other individuals of the same species.

In the Firth of Forth it is sometimes found that the herrings deposit their spawn on the ground or banks between a mile or two to the westward of Queensferry and Inchkeith, being an extent of about ten miles; but many spawned herrings deposit their spawn on the clayey and rocky bottom between Inchkeith and the Island of May.

"Man applies many means to add to the destruction of this useful fish, the herring. The most unwarrantable is the ground, or beam trawl net, which, if at all used on gravelly, hard or rocky bottoms, must annihilate vast shoals of herrings in a state of spawn; and considering the quality of the fish taken by it this instrument should be prohibited in certain localities at certain times."

Mr. Mitchell further says:—

"1861.—The fishery off the coast and near Dunbar, was very abundant this year, and yielded several thousand barrels, the great proportion of which was sold fresh of which no account was obtainable. About the 30th of August the shoals began to deposit their spawn a short distance from the harbor, and on the 3rd day of September the fishermen found that a large body of herrings remained fixed to the ground in the process of spawning, the ground being of a rocky or stony nature. When the fishermen ascertained this, several of the boats proceeded to the spawning ground, and letting their nets down to the bottom took up large quantities of herrings, some of the boats having each about 60 crans (or barrels) of herrings. When discharging their cargoes, the boats and nets were covered with the ripened and expelled spawn. The fishermen most unwarrantably continued to fish the herrings in this state even during the day, thus disturbing the fish on their spawning ground on Sunday the 1st September and two following days. This disturbance of the spawning shoal was most injudicious and the more to be condemned when it is considered that the fishermen had just about finished a most successful season. The ground upon which the herring deposited their spawn is about half a mile from the shore and about three-quarters of a mile in length and a quarter of a mile in breadth. It was easily known from the sea having a whitish opaque appearance and from the strong fishy or oily odour. Immediately after the spawning the herring shoal started off."

"1862. As it was considered of material importance by the Honorable The Commissioners of the Fishery Board to ascertain the circumstances connected with the depositing of the spawn of the herring, the cutter "Princess Royal" was appointed to proceed to the localities where the herring were supposed to deposit their spawn,

in the spring or beginning of the year 1862, and men accustomed to use the diving apparatus were employed to go down to the bottom of the sea and examine the ground, and to bring up such spawn as might be discovered by them. They went down at two different places and found no spawn, but having been told that "spent" herrings had been taken near the May they went down in the beginning of March to the west of the May in 15 fathoms of water, where they found spawn firmly attached to the stones, and they sent up a considerable number of such stones, of from 3 to 16 pounds in weight, with the spawn fixed upon them. The bottom there was found to be stones, shells, sand and shingle."

"On the east of the May, a considerable quantity was found in 20 fathoms water adhering to coarse, shelly sand. The deposit was about three-fourth of an inch thick and was attached to a cake of the rough shells and sand."

In the debate on the "Fisheries Bill in the Legislative Council of Canada, in 1865, the Hon. Mr. Price said:—

"The herring go near the shore to deposit their eggs, and when ripe for spawning cannot retain them any longer. Sometimes a gale comes on, and the fish are thrown up upon the beach. I have seen herring and capelin lying 6 inches or a foot in depth along the shore in the Gulf, and not only they, but their spawn, are destroyed."

Surely, such a mass of direct testimony should settle the controversy, as to whether the herring spawn on the bottom as above set forth, or whether they spawn in the sea off the bottom, leaving the spawn tossing about, at the mercy of the waves, the tide currents, and the winds. It is agreed on all hands that the movements of the herring shoals, commencing in June, are towards the spawning grounds. If they don't spawn on the bottom, why these movements? Because, if the spawn is merely deposited in the sea loosely, any part of the ocean would do as well.

THE SUPPLY OF HERRING IN THE SEA.

The take of herring in Scotland is enormous. The late Mr. Buckland, in 1878 estimated it at 1,000,000 barrels. Referring to this, in the report of Commission of that year he says:—

"Consider what this prodigious take represents. A barrel of herrings contains, on an average, 750 fish; but as a certain number of fish are wasted in the operation of curing, 800 fish must be taken for every barrel of herring cured. In that case, 800,000,000 herring must be taken annually by Scotch fishermen alone. The Norwegian herring fishery is as productive as, or more productive than the Scotch fishery; and the English, the Irish, the French and the Dutch fisheries, are also very productive. Estimating the gross produce of these four fisheries at only the same amount as the Scotch fishery, 2,400,000,000 herrings must be annually taken by four nations, the British, the French, the Dutch and the Norwegian, or in other words, two herrings for every man, woman and child in the world.

"But prodigious as this capture is, there are grounds for believing that the destruction of herring by man sinks into insignificance, if compared with the destruction effected by enemies over which man has no control whatsoever."

"Consider," wrote the Royal Commission of 1862, on trawling for herrings on the coast of Scotland, the destruction of large herring by cod and ling alone. It is a very common thing to find a codfish with six or seven large herrings, of which not one has remained long enough to be digested, in the stomach. If, in order to be safe, we allow a codfish only two herrings *per diem*, and let him feed on herrings for only seven months in the year, then 2 herrings \times 210 days = 420 herrings is his allowance during that time. In round numbers 3,500,000 cod, ling and hake were taken in Scotland alone in 1876. It would be a great exaggeration to suppose that one cod was taken out of every 20 in the sea, but assuming that 5 per cent. of the cod in the sea were actually caught, 70,000,000 cod, ling and hake must have existed off the coast and islands of Scotland. If, however, each of these 70,000,000 cod, ling and hake consumed 420 herrings in a year, they must altogether have consumed 29,400,000,000 herrings or 12 times more than all the herring caught by Scotch, English, Irish, Dutch, French

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and Norwegian fishermen put together, and nearly 30 times as many herrings as are taken by Scotch fishermen alone.

"The destruction of herrings by gannets is also enormous. It is estimated that on Ailsa Craig alone there are 10,000 gannets. Assuming that each bird only takes 6 herrings a day, the gannets on Ailsa Craig alone must consume 60,000 herrings a day, 1,800,000 herrings a month, or 21,600,000 herrings a year. On the assumption that there are 50 gannets in all the rest of Scotland for every one on Ailsa Craig, the Scotch gannets must consume more than 1,110,000,000 herrings a year, or 37 per cent. more than all the Scotch fishermen catch in their nets."

"Gannets and codfish are, however, by no means the only enemies to which the herrings are exposed. Whales, porpoises, seals, dog-fish, and predaceous fish of every description are constantly preying upon them from the moment of their birth. The shoals of herrings in the ocean are always accompanied by flocks of gulls and other sea birds, which are constantly feeding upon them, and it seems therefore no exaggeration to conclude that man does not destroy 1 herring for 50 destroyed by other enemies.

For many years, we were informed, the herring shoals did not visit Shetland, and very little was done by the Shetland fishermen in the way of catching them. Of late years, however, the shoals made their appearance, and the result has been that some 400 boats or more, with the corresponding drift of nets, have been built and purchased by the fishermen of the I'lands. And the fishing proved remunerative until 1889, when such extensive bodies of dogfish appeared off the coasts, that the fishermen could not venture to put their nets in the water, as the dogfish, if they come in contact with a net, will so roll up and entangle themselves in it, by means of the long horny spikes attached to the fins and the tail, as to render the work of disentangling simply impossible. These dogfish remained in the Shetland waters during the whole period of the autumn herring fishing and completely destroyed it. We were in the house of a curer in Scotland, who had made arrangements to pack 50,000 barrels, and who had sent up a large quantity of material, barrels and salt, with coopers. Before we left Wick he had returned, and had not succeeded in securing 5,000 barrels. This serious loss to himself and to the fishermen was caused entirely by the continued presence of the dogfish in such numbers, and to such an extent, on the coasts, as to render herring fishing impossible. The dogfish, therefore, may be looked upon as the natural enemy, not only of the herring, but also of the fishermen, and the herring curer. When the dogfish finds herrings gilled in a net he bites off the tail half as clean as could be done with the sharpest knife. When he gets entangled in a net, the manner in which he rolls himself up in the net, and rolls up the net with him, is simply incredible. So the fishermen have good reason to dread the dogfish.

"The destructive powers of man, therefore, is insignificant when compared with the destructive agencies which nature has provided; and nothing that man has hitherto done, or can do, has produced, or will produce, any appreciable effect on the number of herrings in the sea."

To give an idea of what man is doing, and the great increase which has taken place in recent years, and the improvement in the means of capture, Mr. Buckland says:—

"During the last 20 years the substitution of cotton nets for hemp nets has, it may almost be said, revolutionized the herring fishery. Twenty years ago a boat carried 24 nets made of hemp, each net 40 yards long, with 28 or 29 meshes to the yard, 10 to 12 score meshes deep, and weighing 25 lbs. Each boat carries now (the boats are larger than then) 50 to 60 nets made of cotton, each net 60 yards long, with 35 meshes to the yard; 18 score meshes deep, and weighing 12 to 14 lbs. A boat, in other words, used to carry 960 yards of netting, it now carries 3,300 yards. The nets used to be 6 or 7 yards, now they are over 10 yards deep. They used to present a catching surface of 3,000 square yards, they now present a catching surface of 33,000 square yards. The 3,000 square yards of hemp netting used to weigh

600 lbs; the 33,000 square yards of cotton netting, now, weighs a little more than 600 lbs.

"Without increasing the weight of nets to be worked, each boat has increased its catching power five fold. There are more than 7,000 boats in Scotland fishing for herrings. These boats must, in the aggregate, have nets 23,000,000 yards long, and certainly, in the aggregate 230,000,000 square yards of netting. The Scotch herring nets would, in other words, reach in a continuous line 12,000 miles. They would go more than three times across the Atlantic from Liverpool to New York."

The concluding words of the third last paragraph will, of course, be read subject to, and in connection with the fact that before his death Mr. Buckland changed his mind as to man's ability to cause an appreciable destruction of herring by an unnecessary destruction of spawn.

Mr. Mitchell, who has made the study of herring, in all its phases, a prominent work of his life, in his book in connection with the subject, and preliminary to his insertion of a letter by Mr. Cleghorn, of Wick, makes the following appropriate remarks:—

"The fecundity of the herring may generally be supposed to make up for the great quantities fished and destroyed by birds and the finny tribes; yet it is unquestionably a subject of national importance to consider how far the Legislature should further protect the growth of the herring, and prevent all unnecessary disturbance or destruction of the shoals of herrings and their fry and spawn. We have stated different causes which may tend to diminish the supply; and it will be seen by the letter, of which we subjoin a copy, from Mr. Cleghorn, of Wick, a gentleman who has paid particular attention to the subject, that there may be reasonable grounds for all due care being taken that legislation shall be applied when necessary. We see, almost every session of Parliament, new Acts as to the salmon fisheries, which are comparatively of much smaller value than the herring fishery. The following is the letter referred to:—

"Wick, 7th October, 1856.

"SIR,—Since you have taken the herring in hand, allow me to give you some facts which may be of use to you. There is no subject that more requires elucidation.

"In the "Quarterly Journal of Agriculture, and Highland and Agricultural Society's Transactions" for June, 1839, you will find a good paper on the herring by Mr. Mitchell, of Leith. Please turn it up and read it. The herring is much more local than you fancy. The reason why they are found apparently suddenly making their appearance on the shores is, that they just then have matured their milt and roe, and self-preservation is then lost in their anxiety to preserve the species. Then milts and spawners come together. Till now they were bent on individual preservation; each was on his own hook; they avoided nets and other dangers. Now all sense of danger is lost—their only aim now is the preservation of the race, and when in this state sudden destruction comes upon them in a cloud of nets.

"We have on our shores races of herrings that we know come to maturity in July, August and September. Up to 1851 we took yearly on an average 20,000 barrels, but in July, 1851, we took 30,000 barrels. This seems to have been their culminating point, for in July, 1852, we took only 7,618 barrels; in July, 1853, 7,829; in July, 1854, 2,396; in July, 1855, 2,664; and in July, 1856, 2,977 barrels.

"Our July races then are done; we have fished them out; we have all but extinguished them. We are now doing for the August and September races what we have already done for the July ones. Of these, in 1856 we were only able to take 90,000 barrels, although we brought to bear on them 19,000,000 square yards of netting, the greatest extent of netting ever used here. In 1855 they afforded us 135,000 barrels.

"If the herring belong to the waters in which they are fished, my conclusion, that we are extinguishing the races or reducing them so low that the produce of the fishery will be less than the outfit, is not so absurd as some would insinuate; but it

may be made more apparent when I tell you that the space over which our boats fish here is from the Pentland Skerries to Clythness, about 30 miles. On this portion of sea our 1,051 boats every night during the fishing season spread 19,000,000 square yards of netting, or nets 500 miles long. The wonder is not that we are extinguishing the races, but that they should have lasted so long. The netting has been every year expanding, in consequence of the shoals contracting. The poorest districts use the finest and most extended netting. In 1818 the netting of all Scotland was 10,000,000 square yards, and with that we took 340,394 barrels; while it appears by the Fishery Report of last year that we employed 80,031,507 square yards, and caught 766,703 barrels, showing that with eight times the extent of netting we were able only to double the quantity of herring caught.

"The late Mr. Wilson, of the Board of Fisheries has settled the character of ground on which the herring spawns—see *Blackwood's Magazine* for April last (1856). Were the Government anxious to aid the fisheries they ought to survey the ocean bottom, and map it out, and let us see at least the portions on which the herring cannot spawn. They never spawn on sand; I believe it must be on rough ground. At all events something must be done. Our summer shoals are now so much reduced that we must change our time and the place for fishing. New ground must be sought, longer voyages made, or we must take to winter instead of summer fishing. We must get deep and safe harbors.

"I believe, unless the matter be viewed in the light I have done, this fishery is lost. My views are most unpalatable to all engaged in the trade; and they have so long looked on the herrings as being as enduring as the ocean that my doctrines have been spit upon by them.

"I am, your obedient servant,

"JOHN CLEGHORN."

It is only right to say that although Mr. Cleghorn appears to have had authentic facts and data in his favor at the time he wrote, that subsequent results as to the Wick fishery did not verify his predictions. Mr. Cleghorn was not engaged in the herring business, but devoted much of his time to the study of the herring industry, and was animated purely by a desire to guard and protect that industry. This we learned from a fishery officer who was well acquainted with Mr. Cleghorn. Our own opinion is that the herring are excessively fished on the east coast of Scotland, and that Mr. Cleghorn's voice was in the right direction.

THE MOVEMENTS OR MIGRATION OF HERRINGS.

The question of the periodical migration of the herring, whether they annually come from long distances or from the seas immediately adjacent to the coasts where taken, is still unsettled. On this subject Mr. Mitchell says:—

"Various accounts have been given of the visits of the herring upon our coasts. Many writers have stated, and some scientific works still state, that the herring comes from the Arctic circle in large shoals of some leagues extent, dividing into lesser shoals on coming towards the north of Scotland; one body proceeding to the west coast of Scotland and to Ireland, and another to the east coast, each directing its course southward. Others state that although the herrings do not come from the Arctic circle, they at least come from a considerable distance northward of Scotland. But we consider that the herrings inhabit the seas adjacent to the coasts, bays or rivers where they resort for the purpose of spawning, and that after spawning they return to the sea in the neighborhood, where they continue and where they feed until the spawning season again approaches, while the fry, on being vivified, continues near the spawning ground until it is of sufficient size."

Both theories have difficulties to encounter, no doubt, but the theory of Mr. Mitchell seems to have the greater of the two, and that is in the well known fact that from time immemorial great shoals of herring, accompanied by a numerous contingent of whales, gulls and gannets, hake and dog-fish, covering great areas of

the sea, periodically make their appearance off Cape Wrath, the north-west point of Scotland, setting in to all appearance from the north, and pursuing the land dividing into two great divisions, the larger one taking the coast along the north of Scotland, and thence heading southward on the east coast, occupying weeks in its progress, the other and smaller wing taking down the west coast. By the time these herrings reach Wick they are generally pretty full of roe and milt. Whence do they come, and for what purpose? What becomes of the fry from the spawn deposited on the east coast of Scotland? Do they remain in those seas, or are they led by instinct to return by the Pentland Firth and the Orkneys and Shetland to the winter grounds in the north, whence their progenitors came? Mr. Barry, a member of the Fish Inspection Commission, after his tour on the Scottish coast, on this subject says:

"The steady periodical resort of the great shoals of herrings to the east coast of Scotland, for the last fifteen years, goes far to contradict the general belief in the capricious migratory habits of that fish; but although they keep their ground upon the shores of the North Sea, they frequently vary their position, sometimes abounding on the shores of Caithness, and as far north as the Orkneys, and sometimes on the shores of Aberdeen, Kincardine, Forfar, Fife and Haddington, and as far south as the Tweed. It is an object of great importance to the fishermen to be made acquainted speedily with the most favorable localities. Along the whole east coast there are stationed intelligent officers, whose duty it is to communicate constantly with headquarters at Edinburgh, and the facilities afforded by telegraph would enable the authorities to keep us informed of the movements of the fish."

In the debate on the Fisheries Act, in the Legislative Council of Canada, in 1865, Hon. Mr. Letellier said:—

"The subject of the migration of fish is not yet well understood. There is an annual migration, but it is not so regular that we can base calculations upon it. As far as the herring are concerned, they do not frequent the river now as much as they used to do. The character of the shore changes, and the fish go elsewhere to spawn. Near my residence the sea carried off a shoal, and there are now very few herrings caught on the shores of the parishes of St. Denis or River Ouelle. In Rimouski the fish are now more abundant than they used to be. In Témiscouata they stay longer than formerly. The changes in the bed of the river and the constant navigation of certain channels are the chief causes of the difference."

FLUCTUATIONS IN THE MOVEMENTS OF THE HERRING.

Mr. Buckland on this head says:

"It is worthy of remark that the herring fishery in time past has always been liable to remarkable fluctuations, over which man apparently has had no control; and there is no reason to suppose that the fishery will be exempt from such fluctuations in the future. The herrings, without any assignable cause, have suddenly left whole lochs, or even portions of the coast for long periods of years, and have afterwards, equally without any assignable cause, returned to them. We received accounts of such occurrences in numerous places in Scotland, but these fluctuations in the herring fishery are by no means confined to Scotland alone. The same thing has occurred in Norway, Denmark and other countries. There is no evidence that it has been due to excessive fishing, and we are bound to conclude that the migrations of the herrings have been, and still are, subject to laws which man up to the present time has been unable to discover. A failure of the fishery at any portion of the coast ought, under such circumstances, to occasion little or no disquietude; on the contrary, as in times past, the herring has been variable in its movements, it is reasonable to assume that its movements will be variable in the future. Failure, therefore, in particular places; even though protracted over a series of years, ought not only to be regarded with equanimity, but even to be expected. It is possible, however, that in the case of the narrow firths and lochs of Scotland the great increase in the number, length and depth of the nets may have some bearing on the fluctuations."

On this subject Mr. Mitchell says:—

"From 1690 to 1700 a very extensive fishery was carried on at Cromarty, whither the herrings annually resorted in considerable abundance. Shortly after the Union (1707) an immense shoal was thrown or rather ran themselves on shore, in a little bay to the east of the town. The beach was covered with them to the depth of several feet, and salt and casks failed the packers. The residue was carried away for manure by farmers in the neighborhood. Strange to say, however, they left the firth in a single night, and no shoals again made their appearance for more than half a century."

Further, Mr. Mitchell says:—

"The herring is very capricious, and has been driven away by injudicious action on the part of fishermen," as stated in another chapter of this report. On the subject of the return of herring to forsaken grounds in the north, the British Consul at Gothenburg, Sweden, addressed to the Earl of Derby the following letter:—

"BRITISH CONSULATE, GOTHENBURG, 4th January, 1878.

"MY LORD,—I have the honor to report that great shoals of herrings, of the large kind, which disappeared from the coast in 1809, have now made their appearance again north of Gothenburg, on the coast of this country. This information I have thought proper to communicate to Her Majesty's Government, as British subjects came to this country during the former herring periods with ships to trade in this article. I may here make mention that my own father, Thomas Duff, a native of Inverness, and cooper by trade, came over to this country to teach the Swedish people the art of curing the herring according to the Scotch method. The first appearance of the herring took place at Christmas, when whales were seen following the shoals of herring to the coast.

"I have, &c., "F. W. DUFF.

"The Right Honorable

"The Earl of Derby."

THE HERRING A TIMID FISH.

Mr. Mitchell says:—

"The herring is a very capricious fish, and we have before stated instances where the shoals have been driven away, such as from the Swedish coast, and where they were scared away by continuous fishing, night and day, and the shoals never returned."

Mr. Mitchell's book was published in 1864. The herring had not returned then, but they returned, as Mr. Duff shows, above, in 1878, after an absence of *seventy-nine* years. Mr. Mitchell, speaking of the extent of the herring industry in the town of Burntisland in 1775, says:—

"The want of judicious superintendence was the cause of the shoal of herring being driven away. Herrings like other gregarious animals, are easily disturbed, and the fishing during the day fairly drove the shoals off in the course of time from their haunts."

In 1819 an act was passed for the encouragement of the herring fishery on the coast of Ireland.—Mr. Mitchell quotes clause 15:—"And whereas shoals of herrings are frequently frightened from the entrance of the bays and creeks by vessels moving and shooting the nets at improper places, and by shooting long lines at the entrance of the bays and creeks, no vessel on the coast of Ireland shall moor or shoot nets or lines in any place forbidden by the Inspector under the penalty of £20.

"Clause 16. No net shall be shot or set on the coast of Ireland during the day time, under a penalty of £10, nor at any time or place forbidden by the Inspector, under a penalty of £20."

The British Commission of 1878, of which Mr. Buckland was a member, found, as already quoted elsewhere, that, "It is desirable to prohibit the shooting of movable nets between sunrise and sunset, as no doubt shooting nets in daylight scares

the fish, causing the fish to sink. In this way the act of one or two improvident fishermen may cause loss to all the others."

An old intelligent fisherman in Wick told us that the fishery there, he had no doubt, had suffered greatly from the objectionable action of many fishermen in shooting the nets early in the afternoon, as soon as they reached the fishing ground.

OFFAL.

Throwing offal or refuse of herring into the sea in the neighborhood of the fishing grounds is another reprehensible practice, certain to drive the herring away, as they appear to be very sensitive to offensive sights and smells. It appears that in Sweden this had something to do in scaring away the fish, as above referred to.

Mr. Mitchell says:—"Those vessels which, after gutting the herring on board, throw the refuse into the sea, ought not to be permitted to fish where there are herring shoals; and this law ought to be enforced by the Dutch Government (whose fishing vessels cure on board), which might order that the portions taken out of the herrings at gutting be barreled up for use, for the purpose of making oil, or for manure, or for both purposes.

"The quantity of herrings fished in Sweden, prior to 1809, was about as great as that fished in Scotland; yet by allowing the refuse of the herring which had been boiled at places on the coast, for the purpose of obtaining the oil, to reach and taint the sea, the shoals left," and as we have seen, did not return for 69 years.

Mr. Mitchell further says:—"We are of opinion that any operation which tends to disturb or scare the herring may drive away or diminish the shoals, such as leaving the nets loaded with herrings in the water, when they are unable to be taken out in consequence of their weight, throwing the refuse into the sea after gutting the herring, as is done by the Dutch busses, or allowing the refuse of the oil of the herring to go into the sea, as was done on the Swedish coast."

CLOSE SEASON FOR HERRING.

"The question of a close season for herring was very fully discussed by the British Commission in 1878, and much evidence taken in relation to the point. The fish-curers were almost unanimously in favor of a close season for herrings. So were many of the fishermen, with other witnesses, to whose opinions much weight was attached. The Commissioners arrived at the conclusion that it would be impossible to adopt a close season in respect to the herring, chiefly because the same close season would not suit every locality, as the great shoals or armies of herrings appear in the north-west of Scotland in the beginning or middle of May. The great fishery in the Minch, the sea between the Long Island on the west and the Mainland is prosecuted from about the middle of May to the beginning of July. The fishery on the east coast commences about the middle or end of July, and continues until the beginning or end of September. By the Act of 1860 (23 and 24 Vict., cap. 92), a close season was instituted on the west coast of Scotland, but it was found to work so oppressively on the fishermen that in 1865 it was partly repealed by 28 Vict., cap. 22. The Commission strongly urged the entire abolition of the Act, and they concluded that the objections which may be urged to a close season more than outweigh the benefits which would result from it.

WASHING HERRING.

The washing of salt herring is condemned in Britain—the curers holding that the brine formed of the salt, the blood and the fat adhering to the packed herring helps, contrary to an opinion at one time prevalent in a very marked degree, to preserve the fish, and to retain all the delicate flavor and the nutritious qualities of the herring—and that the use of the proper quantity of salt and the exclusion of contact with the air of the atmosphere, the chemical action of the salt is sufficient to prevent deterioration of the brine and tainting of the fish. The Scotch curers consider that the washing of herring before salting is most detrimental to the fish, injurious in every way, and destructive of the quality of the herring. The only

washing done in Scotland to herring is, as mentioned elsewhere, in washing, sometimes, the herring used to re-fill the barrels after packing, should the fish appear dirty or greasy.

ROUND, OR UNGUTTED HERRING.

Although at one time a considerable quantity of ungutted herring, exclusive of red herring, were put up in Scotland, the practice has been discontinued, and we were told by leading curers that no one would now think of packing in pickle ungutted herrings—that to do so would be a waste of time and material. The Dutch at a very early period in the history of their herring fishery found out the benefit of gutting herring. They claim that after the fishing of herring commenced in the Meuse in 1163 the fishermen of Zurich Zee were the first to fish them and put them in barrels; and “that the fishermen of Biervliet were the first who invented the better method of preserving them salted, *by gutting and taking out those parts of the herring which before caused them to spoil much sooner.*”

In an essay published in England in the early part of the 17th century, entitled, “Some Observations on the Present State of the British Fisheries, and the Means of Improving Them,” the writer says:—“We want only encouragement to carry this trade entirely from the Dutch, and one of the greatest would be to make early herrings fashionable. Indeed, all lovers of their country ought to have them on their tables in the month of July, if possible.”

BORACIC ACID.

It is said that the Norwegians use boracic acid in curing herrings, but whether they do so in combination with salt, in the large barrels we cannot say. In Edinburgh, however, we met persons who had used Norwegian herrings, put up in tins, and preserved by boracic acid. They said those herrings were pleasant to the taste, and that they did not consider the nutritious qualities of the fish in any way impaired. They said they had heard that scientific men disapproved of the use of boracic acid in this way as being detrimental to health.

In London we were informed that a large portion of the milk used in that city was treated with boracic acid before it was offered for sale, in order to preserve its sweetness.

If this be true, we can only say that the most pleasant milk we had on our journey was the milk we used in London.

THE HERRING INDUSTRY OF THE DOMINION.

The herring industry of the Dominion, which has attained to very respectable proportions, in which a large amount of capital is invested, and in which a large amount of labor and energy are engaged, is known to be at present in a languid and unsatisfactory condition. The demand for our herrings has been checked, in consequence, in many instances, of the inferior quality of the herrings placed upon the market, and of the packages in which they were contained. This inferiority of our fish does not arise from natural causes, because there can be no doubt that the herrings on the Atlantic coasts of the Maritime Provinces are equal to the herrings of any nation in Europe, excepting, perhaps, the Lochfyne herring of Scotland. The inferiority of our herring as placed on the market arises from preventable causes—from careless handling of the fish, when taken, exposure to the sun, deficient curing and packing. This condition of things is well known to the retail dealers and the consumers, and it is admitted largely by many of the large dealers engaged in the trade. The answers made to the questions sent out by the Committee of the Dominion House of Commons in 1869, and what we have recently learned of the views of many of the Nova Scotia merchants on this subject, show this. This knowledge is encouraging, because it implies co-operation, and the co-operation of all concerned in the trade will be necessary in order to place this important industry upon a satisfactory, mercantile, national basis.

This industry with us is very much in the condition in which the herring industry of Scotland was over 100 years ago. A Scotch writer in 1749, referring to the state of the herring industry in Scotland at that time, says:—

"It is very plain that our not succeeding hitherto (in the herring fishery) in any degree proportionable to what might be expected from the possession of such advantages, has been owing rather to want of care, to want of diligence, to the want of due regulations, to the want of sufficient capital, and finally to the want of a proper authority to guide, instruct and inspect the conduct of such fisheries. These and these alone must be the causes of former failures and miscarriages," and Again:

"In the five years from 1779 to 1785, notwithstanding all the expenditure of public money, and the enterprise of private individuals, the herring fishery, for want of sound legislation and judicious superintendence, had nearly ceased to be of any importance." And again:

"From the irregular manner of curing herrings at that time on the Scottish coast, no progress of any importance had hitherto been made. Although abundance of fish might have been caught, the ignorance or dishonesty of curers in preparing inferior fish, put up in unfit, inferior packages, with inferior salt, prevented herrings from being received with favor either at home or abroad."

At that time Scotch herring were generally cured by the fishermen themselves, and that being the case, it could not be expected that the work would be well done. Take, for instance, the great pork industry of Ontario. What would it be if every farmer cut up, cured and packed his own pork? Instead of doing this, he brings it to the market in the carcass at the proper season of the year, and sells it to the pork packers, men who have facilities for the work men who have knowledge of and experience in the trade, who can divide the carcasses into the different grades required by the trade, and who can put it up in a uniform manner, and in accordance with the laws and customs regulating that particular and important industry.

Mr. Bruce, of Frazerburgh, told us that his father was one of the first fish-curers who made the curing of herrings a special business on the east coast of Scotland, and that as soon as the business of curing and packing was taken out of the hands of the fishermen, and performed by a new class of men, devoting their capital, their intelligence, skill and energy to the work of curing, leaving the fishermen all their time to attend to their boats and nets, the character of Scotch herrings at once went up in the markets of Europe, and kept gaining ground in every market in which they were offered for sale.

The whole history of the herring industry of Scotland, in its earlier struggles, and its later successes, shows that well cured herring will always find a market, and that stagnation in the trade is generally due to the action of careless, indifferent, ignorant, or dishonest curers.

The Fishery Board of Scotland is indefatigable in its efforts to increase the demand for Scotch herrings on the continent of Europe and elsewhere, and to this end, through the Foreign Office in London, it has been the means of procuring much useful and important statistical information as to the herring trade in the markets of the several countries of Europe, in Morocco, Tripoli, Tunis, Turkey, and the United States.

The replies received in answer to the circulars of the Fishery Board of Scotland, so sent out, from British Consuls abroad, show, that notwithstanding the great efforts of the Norwegians, the Swedes and the Dutch, and the temporary check to the Scotch herring trade in Stettin, there is still a large demand for Scotch-cured herring on the continent of Europe and elsewhere, proving that properly cured and well packed herrings will always command a ready sale. Mr. Wellman, from whose letter to Mr. Traill, M.P., London, we have already quoted, says that a large portion of the herrings imported at Stettin are sent inland 800 miles or more.

It is well known that people living far inland from the sea must and will have herrings, but they are particular as to quality, and must have them properly cured and packed.

REPLIES OF BRITISH CONSULS.

From the reply of the Consul at Vienna, Austria, we learn that the increase in the imports of Scotch herrings in that city amounted in 1887 to £23,000 more than 1886; that these herrings all bore the "Scotch Government stamp," as it is there called, and the endeavors to introduce Dutch herrings there had failed, Scotch being preferred, and that those herrings all came from Stettin, also, that bloaters are imported into Vienna from Bergen, Norway, showing that bloaters can be sent long distances with perfect safety to quality and sale.

From the reply of the Consul at Brussels, Belgium, we learn that smoked or red herrings packed in barrels do not find sale there, but that they must be put up in hampers containing 100 to 200 fish. It also appears that a considerable amount of Scotch herrings find their way indirectly into Belgium through Holland, where the barrels are unpacked, and re-packed by the Dutch in small packages.

From the reply of the Consul at Copenhagen, Denmark, we learn that Norwegian herring caught in the autumn, and put up in packages of various sizes, are preferred to Scotch herrings, although the Norwegian herrings caught in the spring of the year are not liked, because they lack the requisite fatness.

From the reply of the Consul at Paris, we learn that Scotch pickled herrings are rigorously excluded from France by the imposition of a high duty; also, that the French railways were to be asked (in 1888) to lower the rates for carrying fish, and increase the facilities for through traffic, so as to give a better market to fresh or lightly salted and smoked fish, such as bloaters, kippers and others. In Bordeaux the general preference is for small packages of pickled fish.

From the report of the Consul at Stettin, it appears that the demand for herring in Germany can be increased by careful selection and curing of the herrings, and putting up in small packages. The designation or classification of herring at Stettin imported from Scotland is as follows:—"Full Brands," "Unbranded Fulls," "Spents," "Matties" and "Lewis," thus showing that the "Lewis" herrings—that is, the western coast herrings—are, on account of their excellence, rated as a distinct class of herring.

From Genoa, Italy, the British Consul reports as follows:—"As far as my information goes it would seem that Scotch fish as at present packed will never sell freely; but I am told that there might well be a considerable market for Scotch herrings, pickled in brine, if carefully prepared and brought to market in a nice-looking, attractive condition. The Italians are an artistic people, and like things not only to be good but to look pretty." (May not this be the case, to some extent, with the people of other nations, too).

In his reply, the British Consul at the Hague, Netherlands, says:—"It appears that in consequence of the present (1888) low price of Dutch salt herrings, and their very superior quality as compared with those cured in Scotland, the demand for the latter has so fallen off in this country that the total importation is reduced to 500 or 600 barrels annually and that unless the Scotch curers can either succeed in so improving the quality of their fish as to make it equal to that cured by the Dutch fishermen, or should be unable to undersell the latter considerably in the Dutch markets, there seems little or no probability of an increased demand arising for them in this country.

"The superiority of the Dutch fish, lies altogether in the fact of the herring being cleaned and slightly salted immediately on being caught, on board the cutter whereas the Scotch fish is cured on shore."

The British Consul at Togaurog, Russia, reports that "the best quality of herrings sold in this neighborhood received by way of St. Petersburg, are designated 'Dutch Royal,' and 'Scotch' herring, but are all of the same quality, and probably imported from Wick, Scotland."

"The British Consul at Riga, Russia, says: The demand for Scottish cured herrings, which were originally introduced into this town many years ago, has steadily increased, and the fish are much liked by the consumers, not only throughout the Provinces, but they also find purchasers in the interior of Russia. A large

quantity of the Norwegian-cured fish are imported here, and are brought into competition with the Scotch herring."

"As far as I have been able to gather from merchants engaged in this trade, it appears that it is thought that a reduction in the present high rate of import duty would cause an immediate increase in the demand, and another point on which they lay great stress is, that if the curers wish to find a good market and a greater demand for their fish, *more attention should be paid to quality, cure and packing*, and it is also suggested that there should be an *obligatory Government Inspection*."

These extracts show conclusively that the tastes of people as to herring, in different countries, vary considerably some customers at the same time preferring Scotch, and some preferring Dutch-cured herrings. They also show that it is quite possible and very probable that the large quantities of herrings sold as "Dutch," are really the "Lewis" or west coast of Scotland best herrings, re-packed into small packages of neat and attractive make, and sometimes mixed with Dutch herrings. They also show the necessity of a careful selection of the fish, and of bringing the salt into contact with the fish so soon as caught; and all through the reports the fact is prominently set forth that a good article will always find a ready market, especially if that article be carefully selected, well-cured herring.

Mr. Reid, Vice-Consul at Stettin, from whom we received much kindness and information, and who is largely engaged in the herring trade himself, in his report to Lord Salisbury, in 1888, says:—

"The increase of the demand for Scotch cured herrings can best be promoted by good quality and improved selections, and particularly in the 'selection of the fish,' which should be made suitable for the requirements of the different customers. That the various kinds and selections of herrings imported at Stettin are so numerous, that it is impossible to explain graphically and exhaustively what is required, and suggests that the best way of obtaining information on the subject, would be that one or two practical and technical members or officers of the Fishery Board, were afforded the opportunity of studying the requirements of the trade at Stettin, which is the largest market for cured herrings of all kinds."

The Scotch sent to Holland for skilled coopers to teach them the art of curing herring. The Swedes and the Norwegians, respectively, sent to Scotland for trained coopers to teach them the same thing. There can be nothing derogatory in Canada doing likewise.

REMEDIAL MEASURES.

From the evidence before us, as well as from our own personal knowledge of facts relating thereto, we consider the herring industry of the Dominion of Canada to be at present in an unsatisfactory condition. We consider that very great and important changes in nearly all present methods of cure are imperatively necessary.

These changes, calculated to benefit the whole trade, cannot injure any, but must inevitably and materially improve the position of all concerned, the fisherman, the merchant and the consumer while promoting and consolidating an important branch of the commerce of the Dominion. Therefore, the co-operation of all concerned will be required in order to bring about effectually and economically the necessary reform in this important industry. The country has done much already for the promotion of the agricultural, and commercial and the manufacturing interests, and there can be no doubt that the country, through the Legislature and the Government, will do whatever may be necessary to place the herring fishery of the Maritime Provinces upon an improved, permanent and satisfactory basis.

We consider the Scotch system of treating herring, as an article of commerce, to be as perfect as any system can be when honestly carried out in all its integrity, and that improvements in the herring industry of Canada can safely be made after the Scotch model, so far as our somewhat different circumstances may permit.

In one most important respect the Scotch fishermen have an immense advantage over the Canadian fisherman, and that is in having all the curing and packing of herrings performed by a distinct and independent class of merchants known as

fish curers. We have seen that the herring industry of Scotland never amounted to anything, never prospered, until an enterprising and energetic body of men came forward and assumed the position of fish curers, taking that part of the business entirely out of the hands of the fishermen, to the great relief of the latter, and the promotion of this important business. In order, therefore, to place this industry in Canada upon a satisfactory and permanent basis, we are of opinion:

1 That while some slight degree of improvement in the details of curing and packing herrings may be at once attained by changes in the present methods, yet no real permanent improvement can take place nor can the herring industry in Canada be placed upon a satisfactory commercial basis, until the fisherman ceases to be his own fish curer, and until the business of curing is taken in hand by a class of merchant fish curers, as in Scotland men of energy, business experience and capital, with all the necessary appliances to carry on the business on fixed principles and in accordance with such regulations as may be promulgated for the benefit of the trade from time to time.

In Scotland nearly all the curers devote their whole time to the supervision of their own curing operations. In former times if a fish curer did not so superintend his own curing business he made arrangements, as Mr. Gordon, of Pictou, in his reply to question No. 4, 1869, states with a master cooper to furnish the barrels, and generally to superintend the cure and putting up, guaranteeing that the same would pass the Crown brand; or he hired journeymen coopers and a foreman, laid in materials for the manufacture of barrels, and the foreman attended to the curing for the market. This was the method, to a great extent in Scotland 55 years ago, and to some extent still.

Mr. Gordon also very truly says, as the result of his own experience, and as we know to be the case, that when a fisherman cures his own fish it is done with the least possible labor and cost, and once they pass into the hands of the merchant or trader, paying up so much of his indebtedness to the former, he feels no more interest in the matter; but it is different with the merchant or curer; his capital, his credit and his good name are at stake, and unless his fish are properly cured he will be the loser. Thus the strongest of all motives, self interest, would induce him to cure and put up for market an article calculated to render a return for his outlay.

2 (a.) That there should be a chief fishery officer, inspector or superintendent, having jurisdiction, under the Department, over all matters of detail pertaining to the herring fishing industry in all the Maritime Provinces, whose business it should be, in association with one or more of the most experienced and most intelligent officers in each Province, to arrange a general classification of herring, and a graded branding standard, as well as an unbrandable grade for the Dominion; having due regard to any special kind of herring peculiar to any one Province or locality; the object being to secure, as nearly as possible, a general Dominion standard on the same lines as the graded standard of Scotland, as nearly as circumstances will permit. Such an arrangement providing such officer we consider as necessary as the establishment of a merchant fish-curing class, in order to attain to anything like perfection of system and permanent improvement. While such an officer would instruct the local officers in technical as well as practical knowledge in relation to fish and fisheries, they would communicate to him all necessary local information having reference to his position and the duties of his office.

To such an officer also, in the first instance, at least might be referred for settlement all disputes arising within his jurisdiction having reference to the herring industry from the catch to the brand. In short, his whole time would be given to the task of re-organizing the entire business, under the law and the regulations of the Department, and of securing an improved and uniform system in all the Provinces as speedily, as economically and as effectually as possible.

(b.) That there should be imported and established in each sea-board county, where the importance of the herring fishing may so warrant, a thoroughly trained Scotch herring cooper, of long experience in the herring curing business, who should act as head inspector for his district, with power, after instructions, to appoint his

deputies, and who should be responsible for their work as well as his own, in inspecting and branding—whose duty it should further be, within his district, to exercise a general supervision at all points where necessary, over the curing of herring, the proper classification, selection, packing, inspecting and branding of herring, to examine the barrels, and to instruct all herring coopers in his district in relation to the mechanical and other duties devolving upon them, and pertaining to their occupation—such county inspectors to interfere in no way with the existing staff of fishery inspectors and overseers.

(c.) That there should be imported from Scotland, for each such county, one crew of expert herring-gutting girls, whose business it should be to go from station to station, teaching all concerned, willing to learn the art of gutting, selecting, classifying, curing and packing herrings, and re-filling barrels preparatory to inspection, as practised in Scotland.

This step we consider most important, not merely as to the modes, but also as to the expedition with which the work can be done, especially when we learn from a reliable source that in some places in New Brunswick it took four men eight days to put up, in a very indifferent way, 200 barrels; and four men over four weeks to put up the same quantity in good order and style—whereas, as already stated, an expert crew of three Scotch gutting girls, can gut and pack 80 Scotch barrels, equal to 100 Canadian barrels of herring, in one long summer day. If the women at or near the several herring fishing stations in the Dominion, and the young lads on the herring schooners were taught, so that a crew of three of these could gut, cure and pack even 50 or 60 barrels a day, or more, what a good work would be done, and what a saving of time and money would be effected.

In this way not only would the women at the large stations be taught, but also the women in small hamlets and out-of-the-way places along the coasts, where the catch is so small as not to induce merchant curers to establish stations, fishermen, their wives and daughters, could be instructed how to gut, assort, cure and put up herring so as to claim the brand for home consumption. Such an arrangement would be of incalculable benefit to isolated fishermen on many parts of the coast. These gutting girls could thoroughly educate all the women on the coasts in the art of gutting and packing in two or three years, and might, if the Department saw fit, be allowed to work for some of the large curers, when necessary, on such terms as might be decided upon, and so reducing expenses.

THE BARREL.

3. That the present Canadian barrel, being too weak to stand the rough handling to which it is exposed on the railways in transportation, should be greatly improved. We think the present capacity of the barrel should be retained. That it should contain not less than 200 lbs. of herrings, exclusive of salt; that it should be made of stronger material; that the staves should be of hardwood wherever possible, and that if spruce is permitted to be used, the stave should be thicker and stronger than the present stave. Fir and pine should be prohibited. The rule in Scotland has been that the barrel might be made of any kind of wood, fir excepted. Mr. Gordon, of Pictou, in his answer to question 4, 1869, says:—"Hardwood is calculated to retain the pickle without souring it." It seems very probable that a fir or pine barrel may "sour" fish or other animal food packed in it for the first time. If a new pine barrel or cask be filled full of pure water, and covered up, and allowed to stand for some weeks, there will be formed in the water a pretty firm gelatinous substance, which, if allowed to remain for some time, becomes very offensive, as has been the case often in regard to pipes made of tamarac and pine, used for conveying water underground, where frequently pipes with a three-inch bore have been nearly clogged up from end to end with this offensive matter. If cleaned out, however, and the pipes relaid, the gelatinous substance will not again form.

The Scotch rule also enjoined that the heads, or ends, must be in pieces not exceeding 8 inches in breadth, and that when the herrings were barrelled up, the

head must be supplied with a flag or bulrush round the edges, but that tow or flax might be used as a substitute.

The rules further required that if herrings were intended for home consumption or exportation to any place in Europe, the barrels to be full bound with hoops at one end and generally three at the bilge, and four at the top. But if the herrings were intended for exportation to places out of Europe, the barrels must be full bound at both ends, and have, besides, two iron hoops, one at each end.

It is universally conceded that oak barrels are the best of all, and where procurable, the Dutch use no other kind. The present barrel, we think, after sufficient notice, should be prohibited. We are of opinion that a little more bilge would add to the strength of the barrel. The hoops should be of better quality than they are now, and there should be more of them; and all barrels intended for transportation beyond the province where the fish are put up, should have at least one iron hoop at the top, and should the barrel be of spruce or Norway larch, then in addition to a thicker stave there should be an iron hoop at each end. If, however, hardwood staves can be procured in sufficient quantity, we think that softwood barrels should not be allowed. The knot of the hoop should be longer than it is in the case of the present hoop, to prevent it suddenly springing off. There should be in the side of the barrel, above the bottom hoops, 15 or 16 inches from bottom, a lunghole about one inch in diameter, with well-fitting bung, and the usual rule as to crossing the heads should be observed. The new standard barrel, when decided upon, should be made a legal standard by Act of Parliament, as is intended to be done in Britain next session of the Imperial Parliament. There should also be a legalized half barrel built of the same material, and in proportion to the size of material used in the large barrels.

SMALL PACKAGES.

4. We are of opinion that in addition to the barrel and half barrel, there should be established a grade of small packages in which to put up re-packed herrings, after the manner of the Dutch and Germans. That these packages or kegs should be integral parts of the large barrels, say one-fourth, one-eighth and one-tenth parts of the full sized barrels. These kegs have been already described. We believe that kegs in every way suitable for this purpose may be procured in Canada. A gentleman largely interested in the sugar refining business told us that he gets a very neat small keg or kit, for holding syrup, made in Ontario, at reasonable prices, and he considers that the small herring keg can be made here as well and nearly as cheap as in Holland. If so, then a very great step is assured towards the establishment of what we believe to be a most important and profitable branch of the herring industry of the Dominion.

We are of opinion that the very first movement towards improvement in this industry, should be in the direction of improving the herring barrel and consequent discouragement to the manufacture of the present barrel.

As already stated, there can be no doubt that a very large business can be done in the small package line if properly gone into and taken hold of with energy and in a business manner. Canada should be able to largely supply the demand on this Continent for herring put up in this way.

CURING.

5. That next in importance to the catching of the herring, is the proper curing of them. This process commences in having the salt brought into contact with the herring, as soon as caught, and if it could be done at sea as soon as the herring come out of the water, so much the better and so much more thorough the cure. All the printed evidence, all the experience of the Dutch, the Yarmouth fishermen and others, and all that we heard on the subject, goes to confirm this. If attention to this preliminary salting be so necessary, and so salutary in results in Britain, how much more necessary is it in the Maritime Provinces, where the temperature in summer is so much higher. In order, therefore, to preserve the herring from incipient taint, and to retain

all the delicate flavour and natural excellence of the fish, it is absolutely necessary that at the earliest possible moment, the curing process shall commence, and that the herring be scrupulously shaded and sheltered, from the damaging effects of the sun—throughout all the stages of gutting, curing, packing, &c. This is most important because injury caused to the herring by exposure to the sun can never be remedied. The injury sustained by herring in this way, is beyond the power of man to remedy. Inordinate quantities of salt, soaking and washing in water may cover up the damage done and prevent further taint, but the lost excellence of the fish can never be restored. There can be no doubt that the great bulk of the injury sustained by the herring of the Maritime Provinces is caused in this way—and if this can be avoided in the future by the adoption of some feasible inexpensive measures to protect the herring from the sun, from the time of catch to the time of shipment, a great point will be gained and much done to redeem the character of Canadian herrings. The next step in the curing process is the “roosing” of the herring after gutting, and the proper salting of the fish when being packed.

Should it happen that the preliminary salting cannot be effected before delivery, then the herring should be well sprinkled with salt during delivery.

The Western consumer is about tired of eating herrings, out of which all excellence has been extracted by soaking in water and over-salting, and if these western markets are to be retained the quality of the fish must be improved, and that at once.

GUTTING.

6. That we consider the Scotch mode of gutting to be as good as any for all commercial purposes, and all that can be desired when properly carried out, and the curing properly attended to. In Scotland the early herrings are very fat, and are not branded. These are the herrings which Mr. Mitchell says are in such request by the wealthy families of Russia, and they are hurried over to Stettin for immediate sale and use. A fish-curer told us that some of these herrings sold in June, 1889, for £10 sterling (\$50) per barrel. There is no material difference in the mode of curing these herrings. In Canada, however, it appears, that in the case of fat herrings caught in July and August, special treatment has been found necessary. Mr. Gordon, of Pictou, who has had much experience in the herring business in Scotland and in Nova Scotia, in his answer to question No. 4, submitted in 1869, says:—

“I beg to advert to the only additional detail, which, in my experience, I have discovered as applicable to the perfect cure of herrings in the months of July and August, on the coasts of Nova Scotia. Having engaged on my own account in a sailing vessel trading on the coast of Nova Scotia and Cape Breton, and provided with salt and barrels, I preferred purchasing the herrings in their green state, and cured a few barrels after the Scottish manner. On examination of the fish after being struck, I discovered an incipient taint along the backbone of the fish, which would increase with age, so as to render them unsuitable for a distant market in a tropical climate. I came to the conclusion that the taint was owing to excess of temperature here over that common on the Scottish coasts, and besides the herrings are larger and fatter in the months of July and August on this coast, than on the coast of Scotland. Thereafter, I ripped, with a sharp knife, the belly of the fish, and filled the belly with salt, and immediately packed them in tight barrels, with one bushel of Liverpool salt to each barrel, and protected the barrels from sun and rain.”

Another gentleman, replying to the same question, says:—“Herrings should be all opened with a knife and filled with salt, otherwise they cannot be properly cured.” This latter statement, as applying to all herrings, seems rather general. Mr. Gordon only recommends this treatment in the case of herrings caught in July and August on the coast of Nova Scotia, when the fish are very fat. Even then it can hardly be possible that the belly of every herring need be filled with salt. To fill a herring with salt must effectually destroy the flavour of the herring and leave it as innutritious as a piece of basswood.

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It may be, however, that some of these July and August herrings may be utilized for the manufacture of kippered herrings. In October, 1889, a very fine and well-flavoured kipper, said to come from Baltimore, U. S., was for sale in Toronto at high prices. It was very fat. The "Ciscos" of Lake Ontario are very fat, fully one-fourth or one-third oil, yet they make most delicious kippers, are in great demand and sell at high prices. The "Ciscoe" is a herring and is taken in deep water in the fall of the year. Many of them are put up as bloaters.

All this shows how necessary it is that some one or more competent men, experts, technically and practically in all pertaining to the classification of herring, should fully investigate all the different kinds of herrings on our Atlantic coasts, and decide upon the different modes of cure adapted to special kinds of herrings, in special localities, and at special seasons of the year.

ROUND, OR UNGUTTED HERRINGS.

7. That between the mode above recommended by Mr. Gordon, and the mode of putting up round, or ungutted herrings, there must exist many degrees of difference. We have already referred to ungutted herring, and to the fact that the Scotch curers strongly disapprove of packing ungutted herring, and expressed their surprise that any people of the present day would waste salt and time for such a purpose. In the case of the best packed herrings, if a stave breaks, and the brine runs off the herrings undergo very serious deterioration, but in the case of ungutted herrings, under similar circumstances, total destruction of the contents of the barrel would take place, from the setting free of the elements of decomposition contained in the ungutted herring, theretofore held in check by the preservative qualities of the salt and pickle, round, or ungutted herrings put on the market in any quantity can only do harm by damaging the character of the whole catch of any given locality. We therefore consider that the putting up of all such herring for commercial purposes, should be strictly prohibited.

PICKLED HERRINGS.

8. Having already described the Scottish method of curing and packing herrings, and having expressed our opinion of that system as being entirely adapted to the curing of herrings on our Atlantic coasts, we feel convinced that its general adoption and its legal enforcement would, in a very short time give Canadian herrings a very high standard and character in the markets in which they are now held in very low estimation. We have given this subject our best consideration, and so convinced are we of the vital importance of proper curing, and protection from sun and rain, that we would again urge that every diligence and care be exercised in these respects, as well as to the quality, selection and separation of the fish in the first instance. It is most desirable that the fish, especially during the hot season should be handled and shifted as little as possible, as every time they are turned over they part with a portion of the scales, and become softer and softer, more flabby and less ready to absorb the salt.

In the matter of packing pickled herrings for the purpose of repacking into small packages, very great care should be taken to have the fish of the best quality in every respect. In Holland and Scotland, as we have shewn, "fulls" and "crown fulls," the highest brands, are taken for this purpose. The repacking should be done well and neatly and the kegs, as already stated, filled up with the brine from the large barrel out of which the fish has been taken. A slight sprinkling of salt on the bottom of the keg and the top tier of the herring should be given.

This branch of the business is worthy of the special consideration and effort of all who may engage in the curing of herring. We know that in western Ontario there is now a demand for herring put up in small packages, especially in the rural districts. It can readily be seen that in a country where there is so much beef and pork, not many families will purchase whole barrels of herrings, while many would gladly purchase herrings in half barrels, quarter barrels, and the smaller packages.

If the Dutch and Germans can afford to pay freight and shipping charges on herrings from Scotland to Holland and Germany; unpack and repack into small packages, pay freight and shipping charges to New York, and sell these herrings in Quebec and Ontario, with a good margin of profit, surely the herring traders of the Maritime Provinces should be able to supply herrings in this shape as good in quality at lower prices, and with a better margin of profit. By supplying a proper article this branch of the trade can be increased immeasurably both in the United States, the Western States especially, and in the inland provinces of the Dominion.

BLOATERS.

9. We have already also fully described the mode of curing bloaters. Great care should be taken in selecting the fish. The herring may be pretty fat, but should not be too lean, and all unsound and inferior fish should be carefully picked out. The salting and smoking must be carefully and judiciously done. We believe that a large and profitable business can be done in bloaters from the Maritime Provinces, if proper arrangements can be made for curing, packing, transportation, distribution and sale throughout the country. By the use of refrigerator cars on express trains at stated periods, the mildest kind of bloater manufactured to keep without ice for three or four days, can easily be delivered at Toronto and all intermediate points in time for sale and consumption—and a bloater intended to keep without ice for seven or eight days can be delivered all over Ontario, while a bloater intended for use in ten or twenty days, can be distributed in Winnipeg and all along the lines of railway in Manitoba and the North-West. In England, as we have stated, almost everybody eats bloaters. This is a most desirable mode of curing herrings, retaining as it does all the delicate flavour and natural juices of the fish—and these increased by the peculiar mode of treatment. In all the towns and villages bordering on the railways from Halifax to Calgary, a great demand for bloaters can be created by the exercise of intelligence, energy and enterprise well directed, and the production of a good article. The business should commence on a somewhat small scale and gradually extend, as the demand increases, as the business is better understood, and as the machinery for distribution and sale throughout the Dominion becomes perfected. One point to be observed is not to force this article upon the market, but first to ascertain through the larger dealers as nearly as possible what the demand may be; to meet that and no more, but to meet it as it gradually increases. In this way there will be no surplus stock left over, and therefore no temptation to sell an unsound article to the injury of the trade. In England we were told by retail dealers that they very seldom lost any perishable fish, because they had their regular customers, and received only from the supply dealers such quantities of bloaters as they knew their customers would at once require.

We consider the neat light box in which bloaters for immediate use are put up in Britain, containing 50 herrings, a convenient and desirable size. Small packages are easier handled and easier disposed of, and do the fish more justice. This is a branch of the business in which by close observation and good judgment, perfection can be soon attained. As stated elsewhere, the degree of salt to be given must be regulated according to the length of time the bloater is intended to keep, and the smoking should be graduated from the pure white color of the herring to a slight yellow color. The smoke from the sawdust and very fine chips of birch is preferred, as it makes the sweetest bloater and increases the delicious flavour of the fish. Great care should be taken to keep down the heat in the smoke house. The fish should not be cooked there. They should be thoroughly cooled before being packed in the boxes.

KIPPERED HERRING.

The mode of manufacturing and putting up kippered herring for the market has been fully explained already. It involves more labor, and more exact treatment, consequently fish put up in this way sell at a slightly higher price than bloaters. Although the bloaters are an excellent fish, and used in very large quantities in Britain, the kippers are even more delicious eating, and are in great demand, especi-

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ally in the cities and large towns. Immense quantities of them are manufactured in England and Scotland. As in the case of bloaters, the proper class of herring must be carefully selected, and all unsound, sickly and immature and unsuitable fish excluded. We have already stated how very quickly herring can be kippered, prepared for the market, and shipped on board the cars, all in eight or nine hours from the delivery of the herring from the boats. As in the case of bloaters, so kippers are made to keep for shorter or longer periods, the graduation depending on the quality of salt and smoke used. The trade in kippers, by judicious action, can be increased to very large proportions in the Dominion. By judicious management and careful distribution, a large and remunerative trade in kippers can be established from Halifax westward, a trade, with that in bloaters, of the utmost benefit to the fishermen, dealers and consumers of the Dominion. When properly developed, the trade in kippers will use up a large quantity of herrings annually. It may be found expedient to import some kipper cleaning girls to teach expertly the art of splitting and cleaning herring, for the manufacture of kippers.

RED HERRINGS.

10. The modes of manufacturing red herring in Britain have been fully described. We have also shown on good authority how this branch of the herring industry has been seriously injured in Britain by defective selection, imperfect curing and dishonest packing, and that this condition of things arose because there existed in Britain no law for the supervision by the fishery officers, and inspection of red herrings. On this subject Mr. Mitchell says:—"We have in another part of this work endeavored to explain the cause of the diminution of the quantity of red herrings, which in former years was large in some of the towns. Now, it is very well known, that in the curing process of red herrings, the assortment of the different kinds, the size of the barrel, are not in any way subjected to the inspection of the fishery officer, there being no law yet applicable to the curing of red herrings; the trade in most places has, therefore, very much decreased.

"We have seen the red herrings, sold by the principal curers, examined, and found the barrels filled with a mixed variety of inferior fish, the barrels too small, and the herrings improperly packed; so that orders to purchase for foreign countries have quite diminished, and now the curers at the principal port, Yarmouth, have to ship the greater part to the Mediterranean for sale, and often lose considerably by such shipments. We consider that if the red herring cure were placed by the Fishery Board under proper legislation, the quantity required for consumption abroad would be largely increased. One inferior cargo sent by an inferior curer to a foreign port, will tend to destroy the whole trade."

We have already referred to what was told us as to a consignment of inferior smoked herrings from Nova Scotia to Britain, having seriously checked an important trade for some years to come. We are of opinion that a good red herring trade may be established in the Dominion by careful selection of the fish, the exercise of a wise discretion and good judgment in salting, smoking and packing, and, in due time, the enactment of a judicious law of inspection. We think that in the inland provinces, and in the Western States, an extensive market will be found for red herring, as well as for herring put up in any other way.

The herring of the Maritime Provinces, at certain seasons of the year, are well adapted to the manufacture of red herring. The fish should not be too fat, neither too lean. We think that red herrings should be put up, as in Belgium, in hampers or slat made, open boxes, containing 100, 150 and 200 lbs. each, or such other size as convenience and demand may indicate. Careful inspection and branding would ensure greater care in curing, and greater uniformity in quality. Very large quantities of red herring are sold in London, England, and there can be no doubt, that under proper regulations, the red herring industry can be so greatly increased in Canada, as also to utilize very large quantities of herring.

CANNING OF HERRING.

11. Through a letter of introduction procured for us by the High Commissioner in London, and accompanied by the local Fishery Officer, we were courteously shown through a cannery for herrings in Scotland, where some 400 hands are employed. This establishment uses up an immense quantity of herring, all of the very best quality, and of medium or rather small size. The greatest care is exercised if the selection of these fish. They are put up in one pound tins. Herrings put up in this way are very delicious, many people preferring them to canned salmon. The girls who clean these herrings and put them up, do their work very rapidly. The herring canned at this establishment are not for sale in Britain. They are all exported to the East Indies, Australia, and the Cape of Good Hope. It is gratifying to know that a herring suitable for canning is found on the coast of Cape Breton, and that a commencement has already been made there in the canning line. No doubt herring suitable for this branch of the herring industry will be found on other parts of the Atlantic coast, and that canneries will be established in other places. After we had gone over the establishment in question, we were treated to the contents of a can of herring, and can truly testify that we never before tasted anything in the herring line so delicious and fine flavored. The herring were cooked in the tins by steam, thus preserving and concentrating all the natural and delicate flavor and juices of the fish.

By putting up herrings in the different modes mentioned, new demands for such fish would be created, and the parties interested in the trade could realize largely on bloaters, kippers, canned herring, and red herring, all throughout the fishing season, instead of waiting for returns until near the close of the season, a matter of great consequence to all concerned.

INSPECTION AND THE BRAND.

12. In the foregoing pages we have quoted largely from the best authorities and have said much ourselves on the subject of inspection and the brand, which is, so to speak, the seal of inspection. The only hope of establishing the herring fishing industry of the Maritime Provinces of the Dominion upon a sound and permanent basis, as one of the great commercial interests of the country, rests on the adoption of a rigid system of inspection, and the establishment of a fixed standard for herrings. All other measures that may be adopted with a view to accomplishing the improvements necessary in regard to our fisheries industry should be carried out as being merely preliminary to the establishment of a judicious system of inspection as the ultimate aim, for without inspection all efforts to improve the herring industry will amount to very little. We all know of how much benefit to the farmers, the grain dealers and the millers of the Dominion have been the establishment of the present grain standards and grading of grain. A thorough knowledge of the grain trade, experience and skill in the handling of grain, consideration towards the farmer and the grain dealer, co-operation and perseverance have been necessary to bring our grain standards to their present state of perfection. So in like manner the co-operation, the consideration, the intelligence, the patriotism, the technical skill and the practical knowledge of all concerned or interested in the development of the herring fisheries of the Dominion are required in order to bring about the necessary reforms in that industry, and finally to establish the necessary grades and standards for herring, and a wise and judicious system of supervision, inspection and branding.

From the answers made to question No. 5, sent out by the Committee of the House of Commons of Canada in 1869, it will be seen that the majority of those who replied are not only in favor of inspection but also ask that it should be compulsory. They all feel the very great importance of this matter, looking upon it as the only means of resuscitating this drooping industry and placing it upon a prosperous, satisfactory and enduring foundation. From those answers and all the other evidence before us it is clear that there is at present no standard, no system, no uniformity in any degree as to the modes of treating or curing herring, but that every man does so in his own way—indifferent to results if only he can dispose of

his fish. It also appears from these answers that some of the merchants dealing in herring have been indifferent as to the quality of the fish they accept from the fishermen, the same, without inspection, being transferred from hand to hand until they finally reach the hands of the retail dealer, who has to face the consumer. And the only safety the consumer now has is in the determination of many to purchase no more herrings until the quality shall be improved. It is not creditable to the trade that, as stated in one of these answers, consignments of herrings should be landed at Quebec fit only for manure, or, as stated in another answer, that wholesale dealers in Toronto should have to throw large quantities of Lower Province herrings into Lake Ontario. Such transactions are destructive to the trade and most damaging to the fisherman, because they destroy all confidence in the product of his hard labor and check all demand for a staple and healthy article of food, which would otherwise be in request, more or less, by almost every family in the Dominion and by thousands in the Western States of America.

Some of these answers reveal a difference of opinion as to when and where the inspection should take place. We consider that it should take place where the fish are caught and before removal, under regulations such as govern the officers of the Fishery Board of Scotland.

We think that the period for seasoning, maturing or "pining" the herring before inspection and branding should be fifteen clear days between the day of refilling and the day of inspection, being the time originally allowed in Scotland. As we have seen, however, under a pressure of commercial exigency, the time was changed, and by the Commissioners under legislative sanction, reduced to ten days, so that the fish curers, or some of them, might be able to realize on Bills of Lading five days earlier than under the old arrangement.

We think the same exigency could not arise in the case of our own fish merchants, the circumstances being quite different, so that a few days more or less in the matter of realizing on the fish would not put our dealers to any inconvenience. We think that the results of the ten day rule, this year especially, in consequence of the inferior quality of a large portion of the catch in Scotland, have been very unfortunate, and have tended to bring the brand into disrepute, in the manner indicated by the "Glasgow Herald," already quoted. Our own opinion, as already stated, is that from exposure to the sun or rain, or from other injurious conducting causes, incipient deterioration may take place and yet not be apparent within the ten days, while such might unmistakably manifest itself in fifteen days. We are therefore in favor of fifteen clear days between refilling and inspection.

To hold that the inspection and branding should be done by the purchaser, and after the herrings have been landed at a distant port, would be unreasonable and unbusiness-like, being uncertain, because in such case the inspection might never take place, and the old condition of things would still obtain. But the herring should be inspected at the port of catch and cure and by the inspector under whose supervision the fish have been put up. To hold otherwise would, we fear, indicate indifference to the true interests of the fisherman. Herring fishing is a precarious business at best. It is doubly so where the industry is not organized, and based on strict commercial principles. Many fishermen are never able to get out of debt. If herring are worth catching they are worth curing, and if worth curing at all they are worth curing well, and upon the most approved methods, so that through the supply of a standard article the merchant may have such a demand for his fish as to establish the relations between himself and the fisherman on a sure and permanent basis, and thus enable the fisherman to reap to the fullest extent the legitimate reward of his industry.

In the meantime there is an educational work to do, the work of instructing the fishermen as to the changes and improvements necessary and preliminary to the introduction and establishment of the brand.

Another important point in connection with the brand, claims our attention. It is surmised and said that considerable quantities of pickled herring, inferior and badly put up, are annually imported into Canada and, in many instances sold as



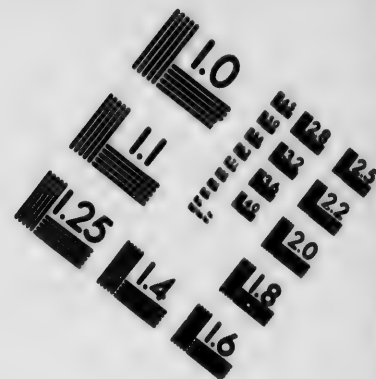
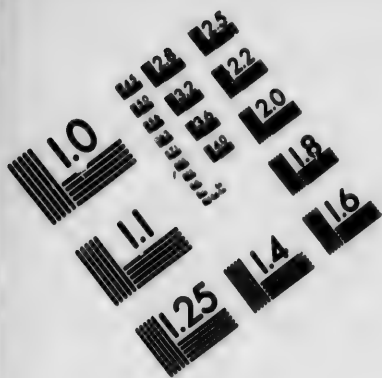
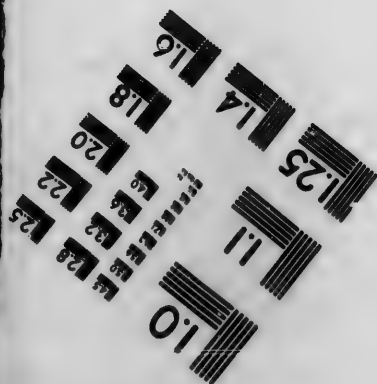
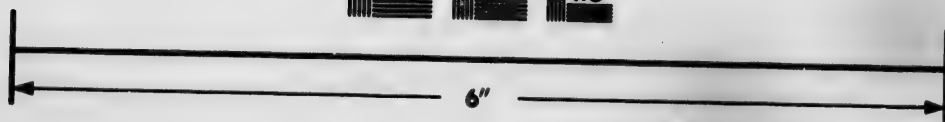
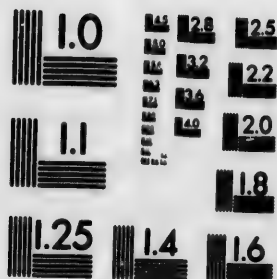
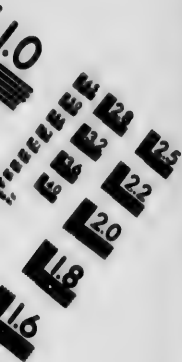


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Canadian herrings. Now it would only be fair and just to our own fishermen, that no pickled herring inferior to the herring of the Dominion, either as to gutting, cure, packing or barrel, shall be allowed to come into the country, and that when inspection and the brand shall have been established no herring of inferior grades shall be imported into the Dominion.

There can be no doubt that much of the feeling which has been manifested in Britain against the brand, has arisen from the imposition of the branding fee of 4d. sterling per barrel. The imposition of that fee was a compromise. The herring industry is of national importance, we therefore think the brand, when adopted, should be free to all using it, and that for a time at least, it should be compulsory.

MOVEMENTS OF THE HERRING.

13. The migratory movements and habits of the herring have not, so far as we know, been much observed or studied in Canada, especially as to the deep waters of the Atlantic coast. We have no reason to conclude that the movements and habits of the herring on this side the Atlantic differ materially from those of the same fish on the coasts of Europe. If, then, the habits of this fish are the same on both sides the Atlantic, there must be great migratory shoals of herrings in deep water off our coasts that are never seen or touched or fished. All that appears to be known in this way is merely as to the appearance of small bodies of herrings mooring close in shore and in the St. Lawrence.

Mr. Mitchell, from whose book we have quoted so much, has very little to say about the movement of herrings on the American coast of the Atlantic. He quotes as follows:—

"In the month of January the herring came upon the coast of Carolina, and are said to proceed northwards."

"They visit the coast of Virginia in February and all the bays and rivers as far north as the Bay of Fundy, and they continue spawning until the month of May, and in some places may be caught until July."

AMERICAN TRANS., VOL. 2, PAGE 237.

"Nova Scotia—A small and very fat herring approach the shores of Nova Scotia from the Bay of Fundy in the month of May, and about the end of May enter the Annapolis Basin and on the shore of Clements are caught in considerable quantities."

"South Coast—Another herring of a large size and full of spawn arrive on the south coast of Nova Scotia in May, but they are lean and not much esteemed, although taken in considerable quantities."

"West Coast—In Chedebucto Bay, and particularly in Crow Harbor, and near Fox Island, a considerable fishery takes place in the months of Autumn. These herring are of good and excellent quality."

McGregor's *British America*, Vol. 2, pp. 171-172.

It would be interesting and perhaps profitable to know from what directions these several bodies of herrings, so different in quality, come. It is hardly probable that the shoals of herring which make their annual appearance off the coast of Carolina in January are the same fish met with in the Bay of Fundy and elsewhere in May, or that the small, fat herring coming to the shores of Nova Scotia from the Bay of Fundy, and the large, lean herring arriving on the south coast of Nova Scotia in the same month can come from the same waters or belong to the same moving shoals. Is it not more likely that the movement of herring in January off Carolina may be but the commencement of a general movement, in *echelon*, of the great army of herrings from the depths of the Atlantic, extending northward, and approaching the shore as the season advances? And yet this would not account for the great difference in quality, above referred to.

We are of opinion that it is very important, and in the interest of all concerned in the herring industry of the Atlantic coast, that the movements and habits of the

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herring in deep water should be closely observed and studied; and that special attention to this matter might be given by the officers and men of the Government cruisers, and of the local shipping engaged in the fisheries of the Atlantic coast, as much information of a useful character, bearing on the future development of the herring fishery, may be procured in this way.

Such knowledge would have an important bearing upon the subject of the protection of the herring fisheries; the question of spawn; the operations of trawlers; the take of fish under present circumstances; modes of fishing and the development of the

DEEP SEA OR DRIFT NET HERRING FISHERY.

14. We have already described the mode of herring fishing on the east and west coasts of Scotland, with the exception of the lochs and bays, known as the deep sea, or drift net herring. It is difficult to believe that this mode of fishing cannot be prosecuted with success on many parts of the coasts of Nova Scotia, New Brunswick and Prince Edward Island. The establishment of a deep sea, or drift net fishery on our Atlantic coast is a matter of the utmost importance to our fishermen, seeing that all the evidence on the subject establishes the fact that all kinds of fish are gradually receding from the shore, and that the inshore fisheries are yearly becoming of less and less value, and that unless a deep sea fishery of herring can be established, the position of the inshore fishermen will become very serious and critical indeed.

We are glad to observe that some scraps of valuable information, bearing on this matter, are at hand, and to be found in the reports of some of the Fishery Inspectors and Overseers of the Maritime Provinces for 1887. Overseer Sellon, of Liverpool, Nova Scotia, in his report says:—

"Herring and mackerel were plenty outside, but did not come into the harbours, and consequently boat fishing was a comparative failure."

Overseer McGill of Shelburne, N. S. says:—

"Herring did not enter the harbour as usual, and, as a result, the fishery was a failure."

Overseer McQuarrie of Sherbrooke, N. S., says:—

"Herring and cod are the main dependence of fishermen on this division, and the catch of these fish was rather below the average. Late in the season, large quantities of herring appeared in some places, and remained a few days; but the quantity taken was confined to a few. Of late years both cod and herring appear to be receding from the shore, and small boats have been unsuccessful in securing large fares. Bait, which was formerly caught in abundance inshore, has of late to be sought after at considerable distances out, in deep water."

From the report of Inspector Duvar, of Alberton P. E. I., for 1887, we make the following extracts:—

"Actual proof has this year been obtained, of the correctness of an impression which I have frequently expressed in reports and otherwise, that the coasts of Prince Edward Island might be made the seat of an extensive fall fishery."

"Along the north coast, especially off King's County, herrings were seen this fall and some thousands of barrels were taken, equal to Labrador. According to appearance this fishery has only to be pursued with energy to attain large proportions Were this fishery established, its ramifications would extend far. Fishermen would have employment after mackerel left."

"The hands now engaged in lobster packing, would find equally profitable employment in the various processes of the herring fishery, as is the case on the coasts of Scotland. Teamsters, and other persons on shore, would find no falling off in their employment, while coopers, &c. would see their business largely increase. With an increasing energy this business would organize itself I am very sanguine as to the success of a fall herring fishery, after a beginning has been made, and in conversation with several firms interested in the fisheries, there seems to be a growing belief, that the herring fishing will, some day, be of much more importance than the

lobster fishery ever was To properly pursue the herring fishery drift nets and a better class of boats are necessary. Were such a permanent herring fishery developed, it would be mainly, a Canadian industry, with little to fear for competition with the United States. Although I have no great faith in the principle of fishing bounties, it might be worthy of consideration whether a special bonus might not be offered for a limited term for the development of the fall herring fishery in the gulf."

These words of Mr. Duvar's are in harmony with the opinions we formed on this subject, from our observation of the herring fishery in Scotland.

While, from certain favorable circumstances, referred to by Mr. Duvar, Prince Edward Island would be a good locality in which to commence experiments in drift net fishing, we think that experiments should not be confined to the coast of that Island, although there seems little reason to doubt that such a fishery could be successfully established there. We think that experiments with a view to deep sea drift net fishing should be made along the entire Atlantic coast of the Dominion. We think that such experiments and the preliminary expense would be more than any combination of our fishermen could bear, and more than any syndicate of fish merchants would be disposed to furnish, especially in a branch of the fishing business, in which, when once developed, everybody could participate. The subject is one of great national importance, and could only be successfully undertaken and successfully carried out by Parliament and the Government, through the Department. The Governments of the herring fishing nations of Europe, Britain, Holland, Norway, Sweden and France have spent large sums of money in developing and encouraging the herring fishery in their respective countries; and there can be no doubt that Canada will do what may be necessary in this matter. To this end we are of opinion that at least six boats, being two for each Province, of the class and build of the Wick boat, with modifications, bringing the boat more into harmony with American lines, and rendering the boat more suitable for our coasts in the prosecution of drift net fishing, should be procured by the general Government, together with the necessary number of nets, a drift of 40 or 50 to each boat.

That 4 men out of the 7 constituting a crew, one of whom should be skipper for each boat, should be imported, of the best men to be had on the east coast of Scotland—with 3 local men additional for each boat, picked men, supplied from among the fishermen of the respective Provinces, practical herring fishermen thoroughly acquainted with the local tides and currents and the harbors on the coasts. As fast as these local men became instructed in the system of deep sea drift net fishing, they could retire, leaving their places to be filled by others ready to avail themselves of the advantages of this educational process.

Scotland imported experienced fishermen from Holland, in 1750, to teach her fishermen the proper modes of fishing herring. Boats can be modelled and built, and nets made by our own people. The whole amount necessary to test and develop drift net fishing would not be great, while the results of the experiments, if successful, would be of the greatest importance not only to the fishermen individually, and the Provinces locally, but to the trade, commerce and national wealth of the Dominion at large.

BOUNTIES.

15. In England and Scotland, in the infancy of the herring fishing industry, large sums of money were expended by the Government in the shape of bounties; by joint stock companies, and by private individuals, for the advancement and promotion of the fisheries, but it was not until Parliament took the matter up, as we have already seen, by wise legislation and the introduction of a judicious system of supervision and encouragement, established this industry upon sound commercial foundations, that any real progress in the development of the fisheries was made. The bounty system then gradually fell into disuse. The bounty system is not so much in favour now as it was then. In Scotland, at present, the cry of the herring

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fishermen is for more harbour accommodation. That is the shape in which they would like to have Government aid.

One of the questions (No. 9) sent out by the Committee of the House of Commons in 1869, is as follows:—

"Are some of these fisheries in a backward state, and if so, what obstacles impede their development, and what means are required to foster them?"

Many of the replies point to the necessity of a better class of boats, as being the principal means of fostering and improving the fisheries, but state that the fishermen are too poor to procure them, unless the Government introduce a system of aid in the shape of bounties. One says:—"The mackerel and herring fisheries are in a very backward state; the obstacles that impede their development are the want of properly fitted vessels and boats, which the inhabitants have not the means of procuring, and there being no merchants here having enterprise sufficient to fit one out." Another says:—"All that is now required to make our fisheries the best on the continent, is encouragement from the Government in the shape of bounties."

Another says:—"The fisheries have fallen off a good deal within the last four years, and will have to be discontinued unless the Government should give aid," and much more to the same effect.

No doubt the sum, for some time past annually distributed among the fishermen in the shape of bounties, has led to a large amount of amelioration of their circumstances as set forth in 1869, and that in many places boats and vessels have been improved to some extent. But it is well known that great improvement in that respect is still needed, and it appears to us that perhaps there is no way in which the Government could do more to improve the fisheries, at a moderate expense, than by furnishing model boats, suited to the requirements of the respective localities, after careful investigation by competent men, assisted by the opinions of the fishermen themselves. We consider this a better way than any new system of bounties, and many of the answers made to question 9, in 1869, agree in this.

TRAWLING.

16. From all that has been already said and quoted on the subject of trawling, it will be seen that we consider trawling, especially within the territorial limits, to be exceedingly injurious to the herring fishery. It is established on undoubted authority in Britain and Ireland, that trawling scares away the herring from the fishing grounds, drives them away from the spawning grounds, and disturbs and destroys the spawn when deposited. The salmon, halibut, lobster and flat fish fisheries generally have been seriously injured, and in many cases destroyed by the operations of the trawlers.

We therefore consider that trawling and the use of all destructive seines and traps, calculated to disturb the herring in any way and to destroy large quantities of immature fish and spawn, should be absolutely prohibited within the 3-mile headland limit, and that efforts should be made by the Government to effect an international arrangement by which trawling on the high seas should be regulated and restrained when the herring shoals are in motion off the coasts, so as not to drive them away from the fishing or spawning grounds, or disturb and destroy the spawn when deposited on banks outside the territorial waters. There can be no doubt that trawling of any kind on herring fishing grounds or where herring do congregate must prove highly injurious to the herring fishing industry, by scaring the fish and driving them from their native or selected haunts. It is now generally held that the salmon returns to its native streams, and there are those who contend that the herring is endowed, in like manner, with a similar instinct, and being as already stated, a timid fish, anything tending to scare or drive it away should not only be avoided, but as far as possible, in the general interest of the country, strictly prohibited.

Public sentiment in Britain, which at first was largely in favor of the trawlers, has undergone a great change, and now supports the Legislature and the Government in the recent legislation still further restraining and regulating the operations

of the trawlers, and the change in public sentiment is still going on in the same direction the more the damaging effects of trawl fishing becomes known. We think that under no circumstances should foreign trawlers be allowed to fish within the Territorial waters.

We are glad to see, since writing the foregoing, that many of the inspectors and overseers are of the same opinion. Overseer Rawlings, of Musquodoboit, Harbour in his report for 1887, says: "There is a large increase of herring and mackerel as compared with last year. The prevailing opinion is, that were the present protective system kept up and purse seine fishing prohibited, the herring and mackerel would always be abundant on our shores."

Mr. Bertram, Fishery Officer for Cape Breton Island, in his report for 1887 says: "In my previous reports reference is made to injurious methods and contrivances for taking fish, and I beg leave to refer again to the subject as the one primary condition on which the perpetuity of coast fishing depends, at least within the three-mile headland limit. The evils entailed by the wasteful destruction of fish and removal of such as escape from their usual grounds of resort, in consequence of seining near or within the bays, has already been referred to in previous reports. This is the greatest objection to allowing foreigners to share in our shore fisheries. But like practices by our own people are equally mischievous, the difference being that the evil is lessened by fewer being engaged in destructive methods when foreigners are excluded. The use of seines, traps and trawls should be prohibited anywhere inside of the three mile limit, from headland to headland, from which aliens are at present debarred, if our fisheries are to be preserved in perpetuity. Most fishermen acknowledge this, and would like to see an Act enforced for the exclusion of all such methods of catching fish within the limit specified, excepting hand lines and straight nets—even the latter with certain restrictions. The only parties who would raise any objection to such a regulation are a few capitalists who can afford the more destructive instruments, and who invest only for present and immediate profit, utterly regardless of consequences to follow. The staple and most valuable branches of fishing were regarded in the purely commercial aspect, or as food production, are those of cod, herring and mackerel. These are the three lines of fishing upon which the ordinary fisherman depends for his subsistence, and those upon which the trader essentially relies, whether for sale in the home market or for foreign export. Yet they are the branches which suffer first and most heavily by the methods of seining, trawling and trapping. On the principle of the greatest good to the greatest number and of the eventual greatest possible good to all, seines, trawls and traps should be rigidly excluded by law from the inside limits named, if not from the Gulf of St. Lawrence entirely."

WASHING OF HERRING.

17. As stated elsewhere, the washing of herring before curing is not practised in Scotland, and so far as we could learn, never has been. The Scotch curers with whom we conversed on the subject, were surprised to hear of herring in Canada being washed before curing. They could hardly believe such a practice possible. To show what has been the practice in the Maritime Provinces in time past, we quote from the answer of Mr. Gordon, Pictou, to question No. 4, in 1869; he says:—

"It is the universal practice of Nova Scotia fishermen to steep the fish for hours in water before salting down, and expose them to the action of the sun during the hottest period of the season, until the water becomes warm, under the erroneous impression that they are thus benefitted by the extraction of the blood. Under this treatment herring part with their scales and juice, and are deprived of that taste and flavor peculiar to herring properly cured. Besides, the body of the fish thus saturated with water is rendered tasteless, brittle and short, and not calculated to turn out satisfactorily at the end of a long sea voyage. The Scotch curers take every precaution to keep the herring from contact with water, before and after salting. Salt the fish in their blood, and the salt will extract the blood."

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Now, it must be quite clear to every man who realizes the importance of retaining, intact, all those qualities of substance and flavor which render the herring so valuable as a healthy and pleasant article of food, and which are so highly prized in Europe, as already stated, that there could be no more effectual mode devised or adopted for the total destruction of all those qualities, than the mode above described by Mr. Gordon. What would be thought of any man or body of men who should treat any kind of animal flesh, beef or pork, for instance, in such a manner, and what would be thought of any one who should subject those articles of food to such treatment? Who would think of selling or buying meat so treated? Then to cover up the damage done by the water soaking to the herring, inordinate quantities of salt are used, and this extracts any vestige of flavor the water may have left, and destroys all the nutritive qualities of the herring.

Here we may be permitted to refer to another pernicious habit, already adverted to, the practice of putting brine on the newly packed herring, in addition to the salt in which they have been cured. This practice is highly objectionable, and is one also that effectually destroys the good qualities of the herring in flavor and substance. This practice may arise from the custom of putting herring down in large casks or vats, and then, after a time, repacking into the common tight herring barrel. Herring treated in this way cannot be much better than those soaked for hours in warm water. The herring should be packed in the tight herring barrels in the first instance, and fully salted, when the necessary quantity of pickle will be formed from the dissolution of the salt caused by the moisture in the fish. The addition of newly made pickle not only interferes with the curing process going on in the barrel, but, as already stated, as effectually destroys the natural qualities of the herring as soaking in water, or the action of the sun's rays acting through the medium of water. We therefore consider that the practice of washing and soaking herring in water and of adding newly made pickle to newly packed herring should be strictly prohibited.

CATCHING HERRING FOR MANURE.

18. This is done, we were informed, sometimes by and for landlords in Ireland, but the practice it is said is not approved of by the people; being in their opinion a wanton perversion and inexcusable waste of the bounties of Providence, intended for the food of man. It is held by many that while nature is generous and profuse in her gifts to man, yet that she revolts at the wanton waste and needless destruction of those blessings.

We share this opinion. We consider that such reckless waste leads to recklessness and improvidence in other respects, and begets a spirit of lawlessness which may interfere more or less with the observance of the Fishery laws, and the Regulations of the Department, enacted and promulgated solely in the best interests of the fishermen themselves. We regret to see that the habit of catching herring for the sole purpose of manure prevails in several places, as appears from the reports of inspectors and overseers, and that attempts are made to justify the practice, on the ground that the herrings enter the bays in the spring in such masses that many are literally blocked with them; and also that it is not possible to export herrings from those localities at a profit. It is to be hoped that such changes and improvements will be carried out in relation to the herring industry, as will make the curing of herring profitable, in every place where herring suitable for commercial purposes may be found. A French Canadian gentleman well informed in fishery matters informed us that much of the herring taken in Quebec is soft and unsuitable for exportation. If so, there must exist a cause for this deterioration, and this may arise from the herring, which is emphatically a salt water fish, entering the Gulf waters containing a large admixture of fresh water, which must inevitably lead to the deterioration of the fish, and this may be from the great quantity of fresh water in the Gulf.

Such fish should not be caught nor put up for sale. The herring come into the bays referred to in the spring either in search of spawning ground, or in an

exhausted condition after spawning, or in search of suitable food which may abound in those localities. In any case, if they cannot be taken profitably for commercial purposes they should be left alone, to remain while they stay, unmolested until they return by the way by which they came, to the deep waters of the sea, there to join other shoals, and where in improved condition, at some future time, they will amply reward the labour of the more considerate and less reckless fishermen. We consider the habit of catching herring for manure to be inconsistent with the Christian civilization of the age, and that the practice should be strictly prohibited.

HERRING OFFAL.

19. We have already shown from unquestionable authority the evil effects upon the herring shoals of throwing offal or fish refuse into the sea, resulting, in the case of Sweden, in combination with day light net fishing, in banishing the herring from the shores of that country, for a period of 69 years.

All experience shows that the practice of throwing offal into the sea near the grounds frequented by the herring shoals, invariably results in scaring the fish away for a time, or driving them away permanently, and we consider the practice should be prohibited under heavy penalties. And that, as in the case of trawling, the prevention of the practice on the high seas, should be brought about by international arrangement.

In Scotland all herring offal is carefully placed in barrels and sold to the farmers for manure, at so much per cart load, in some places 25 cents, in some places 50 cents. Mixed with vegetable mould or black muck, it makes a most excellent compost for manuring purposes.

In some parts of Europe large quantities of oil are extracted from the offal of herrings, by the process of boiling in water in large pans, the water purifying the oil and making it suitable for commercial purposes. We think the law as to the disposal of offal should be strictly enforced.

CONCLUSION.

While striving earnestly and faithfully to fulfil the duties imposed upon us by the Government in the matter of this investigation, we desire to be permitted to say that we are, at the same time, animated by a strong personal interest in the welfare of the fishermen of the Maritime Provinces, and a strong desire to see such changes brought about, for the improvement of the herring industry, as will greatly improve the condition of the fishermen, and lead largely to an amelioration of existing evils, as well as to the establishment upon a sound commercial basis of this important branch of the commerce of the Dominion.

The Hon. Mr. Wells, a prominent citizen of the United States, some time ago visited the Maritime Provinces, carefully investigated the position and circumstances of the Canadian fishermen of the Atlantic coast, and satisfied himself as to what a hard struggle they have for an existence.

On his return to his own country he told his countrymen that the only farm the Canadian fishermen on the coast of the Atlantic had was the sea. That that was his sole patrimony, and that no man had a right to trespass upon it, or rob him of its products.

While amply protected from the encroachments of envious or covetous neighbours, let us hope that he may be assisted by his brother Canadians, in every way consistent with justice to the rest of the Dominion, in the profitable working of his estate and the development of its rich natural products, and its unbounded resources.

All of which is respectfully submitted.

WM. GUNN,
M. G. McLEOD.

Delegates.

December 2th, 1889.

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